

78 02840

171

Contra Costa County **DETENTION FACILITY**

February 1977

BACKGROUND REPORT
TO THE
ENVIRONMENTAL IMPACT REPORT

INSTITUTE OF GOVERNMENTAL
STUDIES LIBRARY

MAY 10 1978

UNIVERSITY OF CALIFORNIA

Contra
Costa
County



MASTER TABLE OF CONTENTS

<u>Chapter Subject</u>	<u>Chapter Number</u>
Preface	
Project Location	1
Project Description	2
Project History	3
Detention Facility Standards	4
Inmate Capacity	5
Project Alternatives	6
Geology	7
Biotic Resources	8
Archaeological Evaluation	9
Historical Resources	10
Hydrology	11
Water Quality	12
Air Quality	13
Utilities	14
Energy	15
Traffic and Parking	16
Noise	17
Existing Land Use	18
Plans and Policies	19
Visual Analysis	20
Social Impacts	21
Economics	22
Criminal Justice Facilities	23
Capital Improvements Policies	24
List of Participants	

Detailed Tables of Contents are Included in Most Chapters

*Contra Costa county -- Correctional
institutions*
Prisons -- California -- Contra Costa co.
" -- Environmental aspects -- Ca --
Contra Costa co.
Environmental impact statements -- California
-- Contra Costa co.
Jails -- California -- Contra Costa co.


PREFACE

This Background Report is a compilation of studies which were made by both County staff and consultants engaged by the County to prepare individual chapters on various subjects relating to the proposed Contra Costa County Detention Facility. Most of the chapters are analytical and cover individual subjects of importance to an EIR; but some, such as the opening Project Location chapter, are included for reader orientation or to provide documentation for the EIR.

Because these chapters are authored by several public agencies and consulting firms having different fields of specialization, their priorities, choices of terms, and text formats often differ. Also, because the chapters were prepared at various times during the the evolution of project, there are some differences in their assumptions and figures (numbers). These do not affect the validity of a background report, and those that are significant are resolved in the Environmental Impact Report.

Developing a background report as part of project's environmental assessment was selected as the best means of accomplishing the environmental investigations concurrently with the development of the Detention Facility project proposal. The project was evolved through a series of steps that generally involved recommendations which were initially approved by a special Detention Facilities Advisory Committee and concurred with (as tentative decisions) by the Board of Supervisors. The process favored the assimilation of environmental information during its course (in keeping with the spirit of the California Environmental Quality Act), but it delayed the development of a comprehensive and detailed project proposal, which is the conventional prerequisite for most EIR work. Time was another consideration in the decision to develop a background report. Since time is extremely important to this project, it was desirable for the Draft EIR to be available for distribution as soon as possible after the project was formulated and tentatively accepted by the Board of Supervisors. By assigning several participants to prepare individual specialized environmental reports with their development and completion coordinated with the Detention Facility program, the EIR work could proceed with the progress of the project. These individual reports comprise this Background Report and are the basis for the Draft EIR. Since they include considerable detail and documentation, staff was able to prepare a somewhat shorter and more readable Draft EIR, and to save time and cost preparing it.

The EIR effort, including the preparation of this report, is being coordinated by a special task force created by the County Administrator. The task force is largely composed of County staff from the offices of the County Administrator, Sheriff-Coroner, Public Works Department and Planning Department, as well as Criminal Justice Planning Agency. In addition, the City of Martinez has assigned a staff member to observe the effort. The County Planning Department is responsible for the preparation and publication of the EIR in its assigned capacity of the County's environmental agency.



Digitized by the Internet Archive
in 2024 with funding from
State of California and California State Library

<https://archive.org/details/C124903160>

Chapter 1

PROJECT LOCATION

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Planning Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	1-1
CONTRA COSTA COUNTY	1-1
Residential Patterns	1-3
Transportation System	1-4
CITY OF MARTINEZ	1-4
Northern Martinez	1-6
Project Environs	1-7

ILLUSTRATIONS AND TABLES

MAPS

Map 1: Contra Costa County	1-2
Map 2: City of Martinez	1-5

INTRODUCTION

Contra Costa County proposes to construct a new Detention Facility. The facility, which will replace the county's existing main and branch jails, will house all of the county's unsentenced male and female prisoners, selected sentenced male prisoners, and all sentenced female prisoners not housed at the work-furlough center currently under construction. It will also contain 2 courtrooms and necessary support areas including judge's chambers, jury deliberation room, conference room, and space for the Municipal Court clerk. The facility will have a capacity of approximately 383 inmates, and have about 186,000 square feet of floor space. The proposed project's location is in the county civic center area of Martinez, in the area bordered by Ward, Willow, Mellus, and Court Streets.

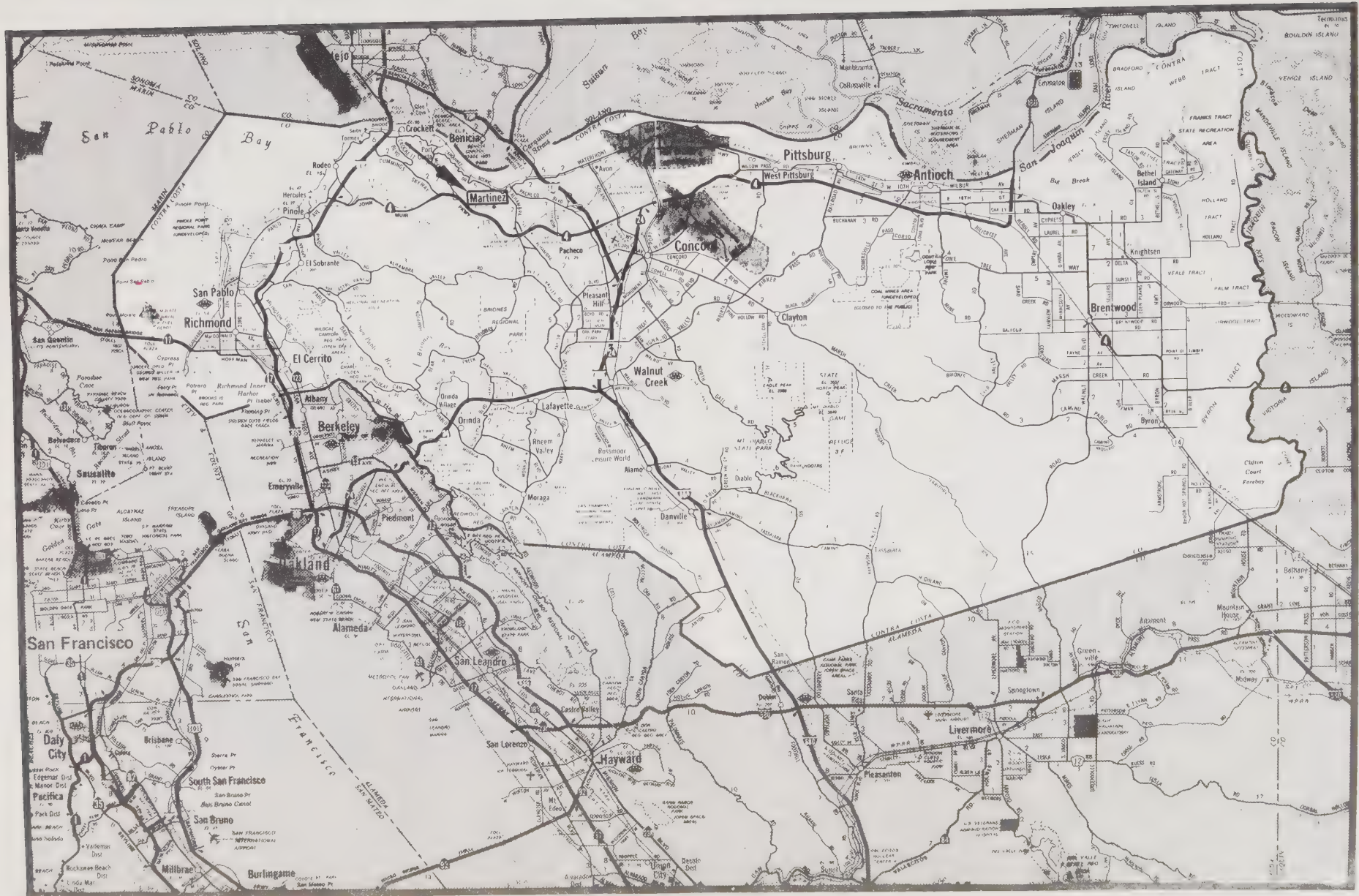
The purpose of this study is to identify and describe the broad spatial relationships which exist between the proposed project and its physical and cultural setting and environment. The intent is to provide the reader with a knowledge of the project's surroundings, to help him to better understand other parts of this background report. Because the project's scope is countywide, and in order to provide a description of the project's regional setting, the report initially focuses upon the entire county. The focus is then narrowed to the project's more immediate environs, the City of Martinez and in particular its northern portion. Emphasis is placed upon such characteristics of place as physiographic features, vegetation, and man-made features, such as buildings and streets. Other factors which are examined include population distribution patterns, social characteristics of residents, and transportation networks and patterns.

CONTRA COSTA COUNTY

Contra Costa, one of the counties of the San Francisco Bay Area, is a diverse jurisdiction. This is true in terms of both its natural landscape and topography and its man-made or cultural landscape. It is situated on the eastern shore of San Francisco and San Pablo Bays to the north and east of the cities of San Francisco and Oakland (see Map 1). The county, which contains 15 incorporated cities, encompasses 732 square miles of land and 69.7 square miles of water; its population in 1975 was 582,829.

The county's western and northern boundary is comprised of a 70 mile coastline of navigable waterways which include San Francisco Bay, San Pablo Bay, the Carquinez Strait, Suisun Bay, and the Sacramento and San Joaquin Rivers. A series of valleys and mountain ranges, most of which run from north to south, along with bay plain and delta lowlands comprise the county's interior. At the western extremity of the county along the shores of San Francisco and San Pablo Bays lies the relatively flat bay plain. This area is bordered to the east by the Briones Hills, an area of gently to steeply sloped hills and small valleys, which are covered with grasslands and woodlands. Moving westward, one reaches the central county area, which is dominated by the large Diablo-San Ramon Valley, which extends primarily in a north-south direction through the county.

Map 1
Contra Costa County



Secondary valleys in the central area include the Ygnacio, Clayton, and Tassajara Valleys. These central valleys are separated from the delta lowlands of east county by the Diablo Range, which is dominated by 3,849 foot Mt. Diablo, the county's highest point. Along the county's northern coast, the delta lowlands merge with the Pittsburg-Antioch plain, which borders the Sacramento and San Joaquin Rivers.

In Contra Costa County, topography has played an important role in influencing man's use of the land, and helping to determine development patterns, transportation networks, and agricultural patterns. Other factors which have contributed significantly to the pattern of man's impact upon the land include water and rail access, and historical development spurred by the growth of the San Francisco-Oakland metropolitan area.

Early county growth consisted of small agricultural settlements and port towns which grew up along the coast as grain shipping became an important activity. At the beginning of the 20th Century, with the coming of the railroads to the county, oil refineries, chemical plants, and other industrial activities began to locate along the coastline. During this period, population growth also tended to be concentrated along the coastline. In addition to this water oriented growth, the county has also experienced growth induced by the expansion of the San Francisco-Oakland metropolitan area. This has been a primary cause of the rapid suburban expansion which has occurred in the county.

Early suburban growth occurred in the bay plain area in and around Richmond. Growth in this area accelerated during World War II as people moved to the west county area to work in the shipyards and other war related industries. After World War II, the county's center of growth shifted from west county to the central county area, and the level fertile agricultural valleys of that area became the focal point of the county's suburban growth. Central county has remained the highest growth area, and now houses more than half of the county's population. In 1975, the county's geographic center of population was near Diablo Valley College in Pleasant Hill.

Residential Patterns

Contra Costa County provides a variety of residential environments in its various geographical areas. The western bay plain area is generally comprised of older intensively developed urban and suburban areas. In 1975, 173,000 persons, 30 percent of the county's total population, resided in the west county area. This area contains a relatively high proportion of the county's low income residents and racial minorities. (See Social Impacts Study for a more complete discussion.)

The central county area contains the bulk of the county's population; 325,000, or 55 percent of the of the total county population lived there in 1975. The area's numerous valleys are carpeted by single-family suburban housing developments, most of which have been constructed since the end of World War II. The central area is the home of a predominantly middle and upper middle class white population, which generally works outside of its area of residence. Certain central county communities serve as residential areas for many of the Bay Area's executives. Such high-income areas tend to be concentrated in the smaller valleys and hill areas, and include communities such as Orinda, Moraga, Lafayette, and Danville.

The east county area, which includes the delta lowlands and the Pittsburg-Antioch Plain, had a 1975 population of 85,000, 15 percent of the county total. Most of the population is concentrated in Pittsburg and Antioch, two older industrial-oriented communities which have experienced significant suburban expansion in recent years. The delta area is a fertile farming region of intensive agriculture, small rural communities, and water oriented recreational activities.

Transportation System

Contra Costa County's transportation network has been influenced by topography, population distribution patterns, and access to the labor markets and large city amenities of the San Francisco-Oakland area. The county's freeways pass through the central valley corridor from north to south (Highway 680), along the western Bay Plan (Highway 80), and along the north coastal area (Highway 4). An additional freeway (Highway 24) provides direct access from the areas of major population concentration in Central County to Oakland and San Francisco, and connects to Highway 680 at Walnut Creek.

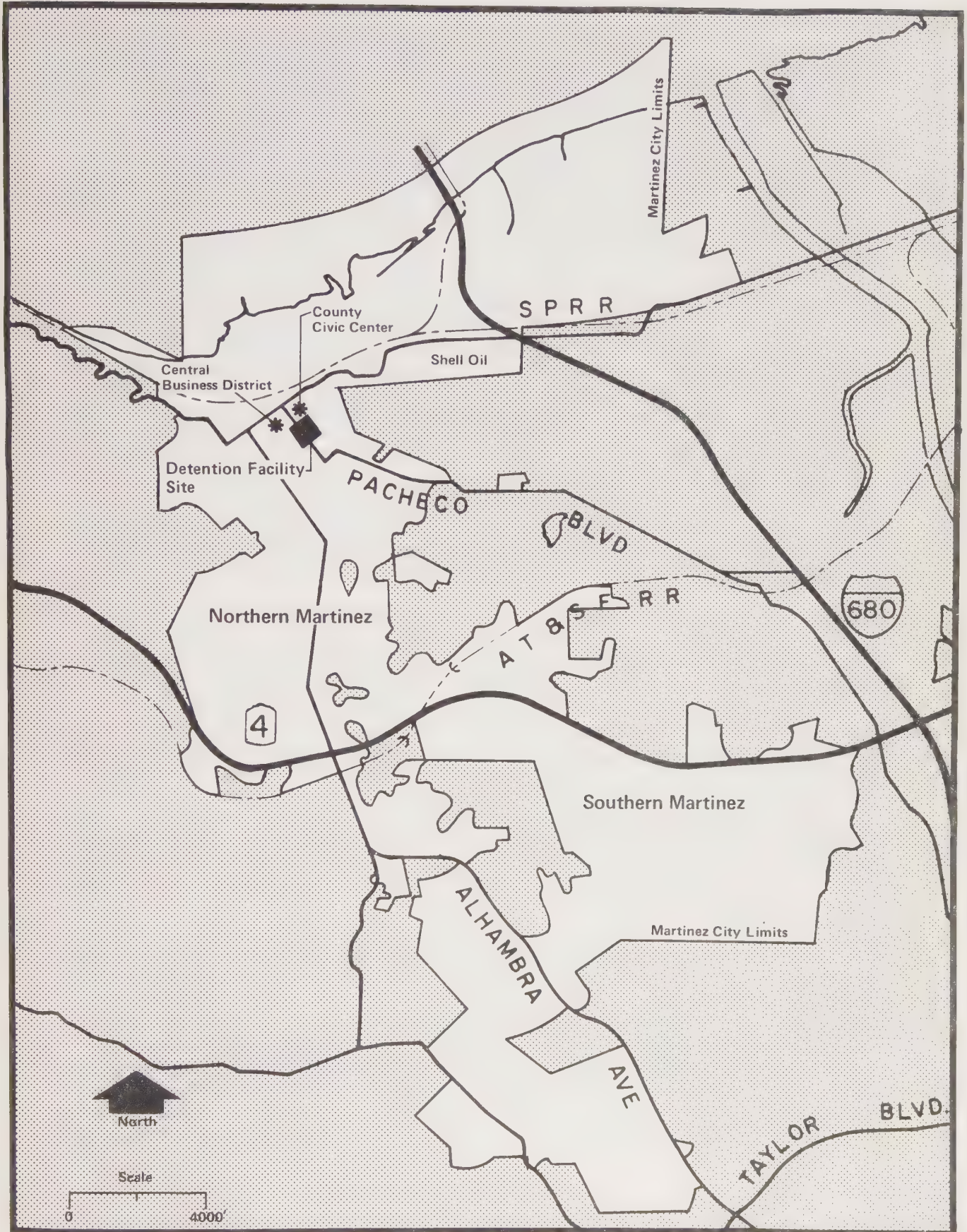
The county's major rail transportation corridor parallels the north and western coast; lines of both the Atchison, Topeka and Santa Fe and Southern Pacific railroads follow this route. A Southern Pacific line also extends the length of the main north-south central valley corridor. The west and north coast of the county border navigable waterways with access to the open sea and the interior ports of Sacramento and Stockton. Major docking facilities in the county include those located at Richmond, Oleum, Selby, Crockett, Martinez, Avon, Pittsburg, and Antioch.

Public transportation in the county is provided by AMTRAK, AC Transit, the Bay Area Rapid Transit District (BART), and the County Airport, Buchanan Field, which is located in Concord. AMTRAK provides passenger rail service at Martinez, with one daily stop in each direction. AC Transit provides full bus service throughout most of west county, and also provides feeder bus service to BART stations from many areas of the county. In addition, since 1975, AC Transit has provided limited service in the Concord-Pleasant Hill area. A transit district has recently been formed in east county, and plans are being made to provide local service in the Pittsburg, Antioch, Brentwood corridor. Fixed rail rapid transit service is provided by BART which has two lines serving the county. One connects Richmond and other west county cities with San Francisco, Oakland and Fremont. The other extends from San Francisco and Oakland through central county to Concord.

CITY OF MARTINEZ

The project site is in the County Civic Center area of the City of Martinez. Martinez is situated along the county's north coast at the northern end of the central valley area, at the terminus of the narrow alluvial valley of Alhambra Creek (see Map 2). The city has expanded beyond the confines of the valley onto some of the more gently sloped surrounding hillsides, particularly to the south.

Map 2
City of Martinez



The northern part of Martinez borders the Carquinez Strait. The waterfront, which is the site of a city and regional park, is characterized by marshlands and is dominated primarily by saltwater habitat. To the west, Martinez is flanked by the rugged Franklin Ridge, which is covered by woodlands and grazing land. The city is bordered to the east by the rolling landscape of Martinez Ridge, which is dominated by the large Shell Oil Refinery with its oil tanks, cooling towers, pipes, and refining apparatus. Southward, the city sprawls into gentle hills and small valleys and merges with the major population concentrations of central county. The communities of Pleasant Hill and Pacheco border Martinez to the south.

The present characteristics of Martinez have resulted to a considerable extent from its historic development pattern. In the early decades of Contra Costa County's history, Martinez was the county's major city, and consequently was selected as the County Seat. Its prominence resulted in part because it served as a terminus of the ferry crossing on the major land route between the Bay Area and the Central Valley gold fields. Martinez also functioned as a port from which wheat and other local grain crops raised in the county's interior were shipped. Early in the Twentieth Century, with the arrival of the railroads, Martinez developed as an industrial center. Its primary industrial employer, the Shell Oil Refinery, began operation in 1915. During the period 1930 through 1960 Martinez grew very slowly. However, since 1960 there has been a resurgence of growth as the city has expanded to the south. Population approximately doubled between 1960 and 1975, from 9,604 to 18,702.

Because Martinez's growth has been concentrated in two different periods, with growth during the two periods concentrated in different areas, the city has evolved into two distinctive areas. The area south of Highway 4 is comprised predominantly of newer suburban development, primarily subdivisions of single family homes built after World War II. This area developed as an extension of the post-war suburban expansion of the central county area rather than as a direct growth of the City of Martinez. Its character is similar to that of recently developed central county suburban communities such as Concord and Pleasant Hill. The northern part of Martinez encompasses the older city, most of which was built prior to 1950. This area has a "small town" rather than a suburban character. It is the area of the city which contains the project site, and will be the area most directly impacted by the project.

Northern Martinez

The northern part of Martinez has maintained a "small town" character, with architecture and circulation typical of the pre-1950 period and many structures more than 50 years old. The narrow streets and many older homes, coupled with remnants of the natural riparian vegetation and mature landscaping create a somewhat picturesque, peaceful, small town atmosphere characteristic of many smaller and older California communities. This atmosphere is moderated somewhat by the presence of the County Civic Center Complex and the Shell refinery.

In addition to its physical dissimilarity from the typical suburban central county community, the northern area of Martinez also houses a fairly distinctive population. The area has experienced mild population declines in recent years, in contrast to the general central county pattern of growth. Additionally, a large proportion of the residents are elderly, income levels are frequently low to moderate, and the percentages of unemployed persons and welfare recipients is high by county standards. (See Social Impacts Background Study for a more complete discussion.)

The northern Martinez area's transportation patterns have been influenced by both history and topography. Topography has limited the number of access roads into central Martinez to three of consequence: Marina Vista, Pacheco Boulevard, and Alhambra Avenue. The first two parallel the Shell Refinery along its northern and the southern borders, and connect with Interstate Highway 680. Alhambra Avenue provides a direct route south to State Highway 4, and then to Pleasant Hill and Lafayette. This limited circulation pattern makes access to downtown Martinez somewhat inconvenient. In addition, regional traffic tends to flow around Martinez (on Interstate 680 and Highway 4) rather than through it. These transportation factors have had both positive and negative effects upon Central Martinez. While they have helped to preserve the "small town" character and minimize major traffic flow problems, they have also impacted the economic viability of the downtown business area. The Martinez central business district (CBD) has declined in prominence as population distribution patterns have changed and new commercial centers with better accessibility to freeways have developed.

Project Environs

The area of Martinez which immediately surrounds the project site is quite diverse. It is dominated by the County Civic Center complex and the Martinez CBD, and also encompasses some small industrial firms, small business and professional offices, restaurants, and residential neighborhoods. The Civic Center complex is prominent, and its large buildings contrast with the area's "small town" character because of their size and architectural style. The presence of County government has resulted in a proliferation of parking lots, and some traffic congestion and parking problems in the project area, particularly in the morning and late afternoon hours. The CBD, which is focused around Main Street, has a relaxed air. Much of the residential area immediately surrounding the CBD is comprised of multiple dwellings, and is somewhat unstable and transient-oriented. The remaining residential area surrounding the project site is comprised primarily of single family homes, and is characterized by a high proportion of elderly residents, low to moderate income persons, and the presence of many long time residents.

To the north of the CBD and its attendant residential areas lie the Southern Pacific railroad yards and the city's AMTRAK station. Between the tracks and the waterfront is a large open area, much of which is planned for inclusion in a joint city and regional waterfront park. A first stage of the park is scheduled to be opened in the summer of 1977. Once fully developed, the park is likely to become one of the city's major attractions and may become a regional attraction.

Beyond the open area lie the waterfront, and the city's marina, the site of considerable boating and fishing activity. Other relevant features of northern Martinez include the presence of the County Hospital and the city's BART feeder bus line which provides service between Martinez and the Concord BART station. Additionally, there are two hospitals near Highway 4, in the southern area of Martinez, a Veteran's Hospital and the Martinez Community Hospital. The Community Hospital has recently been purchased by the Kaiser Foundation and patients are being seen. This facility will serve northcentral Contra Costa County as well as the City of Martinez.

Chapter 2

PROJECT DESCRIPTION

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Public Works Department

February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	2-1
PROJECT OBJECTIVES	2-1
PROJECT PURPOSE	2-2
PROJECT LOCATION AND BOUNDARY	2-3
PROPOSED STRUCTURE	2-3
DETENTION FACILITY - LEVEL 1 AND 1a	2-7
DETENTION FACILITY - LEVEL 2 AND 2a	2-20
COURTS	2-21
INTERIOR TREATMENT OF DETENTION FACILITY	2-21
SITE DEVELOPMENT	2-22
Removal of Existing Buildings	2-22
Street Closure and Diversion	2-22
Utility Relocation	2-23
Storm Drainage	2-23
Parking	2-24
Landscaping	2-24
CONSTRUCTION ACTIVITY	2-25
ENERGY CONSUMPTION CHARACTERISTICS	2-25
Natural Gas	2-26
Fuel Oil	2-26
Electricity	2-26
Solar Energy	2-26
FACILITY STAFFING	2-26
INMATE CAPACITY	2-27
CONSTRUCTION COSTS	2-30
FURNISHING AND EQUIPMENT COST	2-30
SOURCE OF OPERATING FUNDS	2-31
DISPOSITION OF EXISTING DETENTION FACILITIES	2-31

LIST OF FIGURES

		<u>Page</u>
Figure 1	Public Land Ownership	2-4
Figure 2	Site Plan	2-5
Figure 3	View from Pine Street Diversion - Scheme A	2-8
Figure 4	View from Pine Street Diversion - Scheme B	2-9
Figure 5	Building Model	2-10
Figure 6	Site Model	2-11
Figure 7	Plan - Level 1	2-12
Figure 8	Plan - Level 1a	2-13
Figure 9	Plan - Level 2	2-14
Figure 10	Plan - Level 2a	2-15
Figure 11	Building Section	2-16
Figure 12	Building Elevations - Scheme B	2-17
Figure 13	View of Central Courtyard	2-18

LIST OF TABLES

Table 1	Inmate Population Projections	2-28
Table 2	Inmate Housing Clusters	2-29

INTRODUCTION

The purpose of this chapter of the Environmental Impact Report Background Report is to provide a description of the proposed Contra Costa County Detention Facility building and the related features that constitute the project. The information contained in this chapter is a result of in-depth discussions with project staff, consultants, as well as a thorough review of published and unpublished documents available on the project.

Project Objectives

The overall goal of the proposed project is to provide a new Detention Facility to replace the existing inadequate County Main Jail structure located in downtown Martinez, to eliminate the need to house unsentenced prisoners at the County Branch Jail in Clayton and to remove the need to house unsentenced prisoners in adjacent County jails such as Solano County, San Francisco County and Alameda County. The proposed facility will house all male and female unsentenced Contra Costa County prisoners. It will house a limited number of male and female sentenced prisoners who, for a variety of reasons are not confined at the Marsh Creek Rehabilitation Center or in the Richmond Work Furlough Center. It will also accommodate a limited number of juvenile offenders if they are required by State law to be housed in the County jail instead of Juvenile Hall. The existing jail, as a physical facility, is too outdated and inefficient to serve as a base for constructing a new detention facility. The approach has been to plan and design a detention facility that reflects the most contemporary approaches to detention operational practice and physical design and which meet the particular criminal justice needs of Contra Costa County.

Implicit in the project design has been the careful consideration of the policies established by the Board of Supervisors, recommendations made by the Detention Facility Advisory Committee (DFAC), appropriate laws and codes, and applicable national standards and guidelines. The intent is to construct a detention facility which emphasizes dignity and individuality for each inmate in a humane and secure environment; an environment which is both economic to construct and efficient to operate. An extensive effort was made in the planning process to consider the implications of future changes in detention facility requirements and to assure that, as much as possible, the facility would be designed in a way to assure flexibility to meet future needs.

The objectives of the proposed project include:

- * Construction of a 383 bed detention facility with necessary support functions within the Contra Costa County Civic Center which meets the detention needs of County residents and provides humane incarceration for those detained.

* Construction of a two court complex with necessary support functions adjacent to the detention facility with provision to accommodate a future addition of four or more courts at some time in the future.

* Site development including:

- utility relocation
- street closure and/or diversion
- existing buildings removal
- storm drain construction
- permanent parking construction
- site landscaping
- disposition of existing Main Jail

These elements are discussed in detail later in this chapter.

Project Purpose

California State Law (Section 26605 Government Code) requires that Counties must provide detention facilities for sentenced prisoners, and for unsentenced individuals when incarceration is deemed necessary to insure their appearance in a court of law. State law (Section 4004.5 Penal Code) also provides that other local law enforcement jurisdictions may provide similar facilities for the same purposes, i.e. cities within the County. In Contra Costa County, the Sheriff-Coroner's Department operates three detention facilities in compliance with the above laws. These are:

- (1) The Main Jail in downtown Martinez, which is utilized for males (principally unsentenced) and for females (both sentenced and unsentenced)
- (2) The Clayton Rehabilitation Center for sentenced men and the adjacent Branch Jail which is a minimum security facility converted to medium security to house principally unsentenced males
- (3) The Richmond Work Furlough Center which is designed for male sentenced inmates, but also temporarily houses sentenced female inmates

In addition, there are eight other law enforcement jurisdictions (cities) which operate detention facilities within the County. These facilities, in general, are for short-term incarceration (not more than 72 hours) with the Sheriff receiving custody of all individuals for longer term incarceration following initial court appearances. These facilities are described in more detail in Chapter 23, Criminal Justice Facilities. Any law enforcement agency operating in Contra Costa County may deliver individuals to the custody of the Sheriff upon initial arrest. Examples include: the California Highway Patrol, the Federal Bureau of Investigation, the Bay Area Rapid Transit District, the East Bay Regional Park

District, and local jurisdictions (e.g. cities) with or without detention facilities.

The principal purpose, therefore, of the Detention Facility will be to house in a secure environment, all unsentenced males and females prior to their release or trial. It will also include housing for inmate workers, and for sentenced females and males who for some reason cannot be housed in one of the other detention facilities within the County.

Included within the proposed complex are two courts. These two courts will augment the existing courts in the Civic Center. One is planned to serve as a Municipal Court, the other as a Superior Court. Their use will be primarily dedicated to criminal actions although they will also accommodate civil actions. The building will be designed to accommodate an "addition" of four or more courts at some time in the future. For the purpose of this Background Report, a four court addition will be assumed.

Project Location and Boundary

The proposed Detention Facility will be located in the County Civic Center area of the City of Martinez.

The Civic Center boundaries are shown on Figure 1. The total proposed site is approximately 7.5 acres in size. The County owns the bulk of the property and is in the process of acquiring four remaining privately owned parcels. These parcels are depicted on Figure 1. Parcel 1 is a private residence owned by Fred and Pansy A. Caten. Parcel 2 and Parcels 3 and 4 are doctors' offices owned by Dr. Gaines L. Coates, Jr. and Dr. Robert L. Voelker, respectively.


The location of the Detention Facility is shown on Figure 2 which also shows that the development of the project site involves a restructuring of the existing on-site street network and parking facilities within the project area. These elements are discussed under Site Development.


Proposed Structure

In general, the proposed Detention Facility project will include two distinct but connected elements. The major element is the Detention Facility with an area totalling approximately 176,000 sq ft, including outdoor courtyards. It will have 383 beds and will include those functions and activities necessary to receive, process and release those individuals detained. The key elements of the Detention Facility portion are 1) the intake area (which includes alcohol recovery and the pre-trial release unit), 2) the housing areas which include the medical area, 3) the central program areas, 4) the administration area, 5) and the support functions such as kitchen, laundry and mechanical electrical areas. The courts complex is a second portion of the structure with an area totalling approximately 10,000 sq ft. As noted, it will include two court rooms with their necessary support functions. The court complex is designed as an integral

Figure 1



 County-owned property

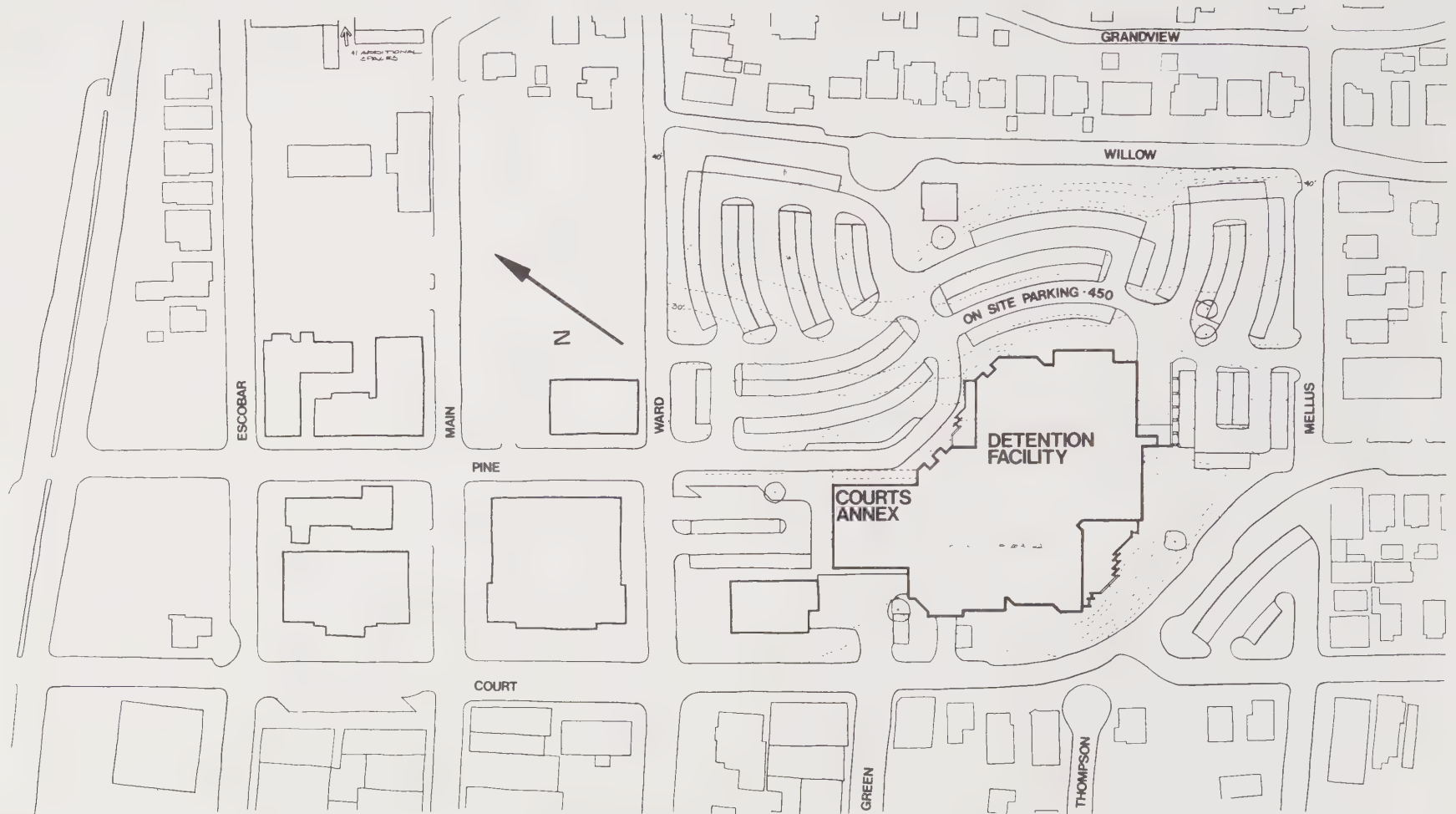
 Under negotiation for county acquisition

0 1000 Feet


CONTRA COSTA COUNTY
 DETENTION FACILITY

Public Land Ownership

Figure 2
Site Plan



Contra Costa
Detention Facility

Kaplan/McLaughlin Schematic Design
CPL 68
January 20, 1977 Scale 1" = 45' & North
Site Plan

portion of the structure. The total floor area of the proposed facility is 186,000 sq. ft. Revisions have occurred after review of the project design by the Detention Facility Advisory Committee (DFAC) and county staff. A generally accurate detailed description of the function and nature of the areas within the facility is contained in the Detention Facility Service Program, Contra Costa County, Facility Sciences Corporation, Beverly Hills, California, December 10, 1976. (Referred to as the Service Program). The key space elements of the Service Program are presented in this chapter. For a more detailed description, the reader should refer to the Service Program itself which is available in the County libraries. The building proposed to accommodate the functions specified in the Service Program is shown in Figure 3 thru Figure 12. These figures depict the Detention Facility at the completion of schematic design. Some revision of the building as shown can be expected during final design, but the proposed facility will be essentially as shown. As shown by the figures, it is a complex building with a variety of structural elements. Its form is largely determined by the housing clusters of single cells grouped around a common day room with adjacent exercise courtyards. With the exception of possible rooftop mechanical rooms, it will be approximately 38-40 feet high, cover an area of approximately 74,000 sq ft and have a total floor area of about 186,000 sq ft including the outdoor courtyards. The structure is planned to be of both reinforced concrete and precast concrete.

The two court complex is proposed as a single story element on the northwest side of the structure.

The detention facility portion of the structure is organized on two main floors, Level 1 and Level 2. These two levels contain the major inmate and staff activities and their circulation system. Each level is further subdivided into a second floor, Level 1a and Level 2a. In the housing clusters, Levels 1a and 2a are similar to mezzanines. Level 1a contains the major visitor circulation, counsel or office areas, and some inmate housing. Level 2a contains the upper portion of the Level 2 inmate housing. The building, therefore, will appear as a four story building, but it will be functionally organized on two major levels.

The final building exterior is under development. Figure 3 and Figure 4 depict two alternative designs for the treatment of the building exterior.

Figure 5 is a photograph of a model of the facility depicting general building massing. Windows and exterior details are not shown but the variation of the building forms and the courtyard exercise spaces can be seen.

Figure 6 is a photograph of the building sited on a model of the Civic Center area. A tentative parking layout is shown.

Figures 7-10 show floor plans for Level 1, 1a, 2, 2a, respectively, at the completion of schematic design.

Figure 11 depicts two typical sections through the facility, while tentative building elevations are shown on Figure 12.

Figure 13 shown a perspective view of the large central outdoor courtyard. This courtyard is also shown in the center of the building in Figure 5. The main courtyard, together with the smaller courtyards adjacent to the housing clusters, provide natural light to the interior of the building and ready access to outdoor exercise and fresh air for the inmates.

Corridors and Access Areas - Two separate corridor systems will be maintained to separate visitors and inmates within the facility. The visitors corridor will begin at the administration area and extend to each housing cluster visitation area. The inmate corridor system will be enclosed entirely within the facility perimeter security system to permit inmate and staff movement without restricting visitor movement.

Detention Facility - Levels 1 and 1a

As shown in Figure 7, Level 1 has approximately 64,000 sq ft, excluding the two courts and their support facilities. It contains the major activities of intake, release, administration, medical, medical and administrative separation housing, intake housing, male trusty housing, and facility support activities such as kitchen, laundry, mechanical equipment, and electrical equipment.

As shown in Figure 8, Level 1a has approximately 17,000 sq ft. It includes the upper levels of the intake, trusty and medical housing clusters, visitation areas for these clusters, administrative area for counselors and volunteer coordinators, visitor corridors and mechanical equipment spaces. The functions performed on these levels include:

1. Vehicle Entry - a vehicular sally-port for loading and unloading prisoners for transport to and from the detention facility by vehicle.
2. Intake/Release - this includes those activities required to process prisoners for holding or release and includes space for the booking procedures, release procedures, interviews by the pre-trial release unit, short term holding areas, and personal clothing exchange and storage. (The booking area is programmed initially for men who constitute the highest volume, but would accommodate the booking of men or women. Booking for women will occur on Level 2 near the women's housing area.
3. Central Control - a secure area which operates and monitors the electronic surveillance and locking systems within the facility.
4. Alcohol Recovery - this area contains holding for intoxicated drivers detained in the facility until sober or released to a third party.
5. Medical - includes staff offices, exam, treatment room, dental, x-ray, storage and visitation.

Figure 3
View From Pine Street Diversion
Scheme A



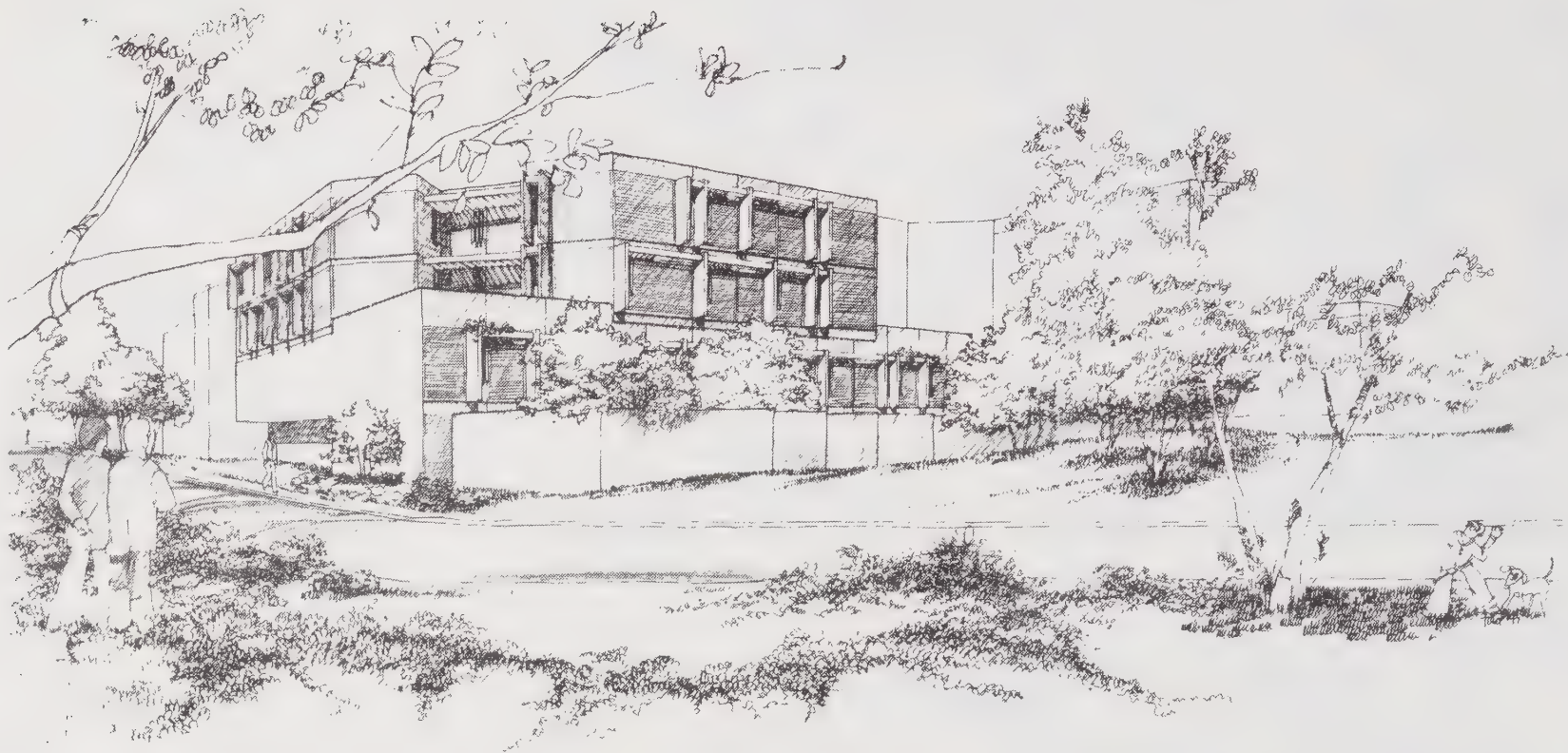
Contra Costa
Detention Facility

Byrnes/McLaughlin Schematic Design
J. E. 20
January 20, 1977

View From Pine St. Diversion

Figure 4
View from Pine Street Diversion
Scheme B

6-9



Central Coast
Detention Facility

McGraw-Hill Construction Information Group
San Francisco, CA 94111

View From Pine St. Diversion

Figure 5
Building Model

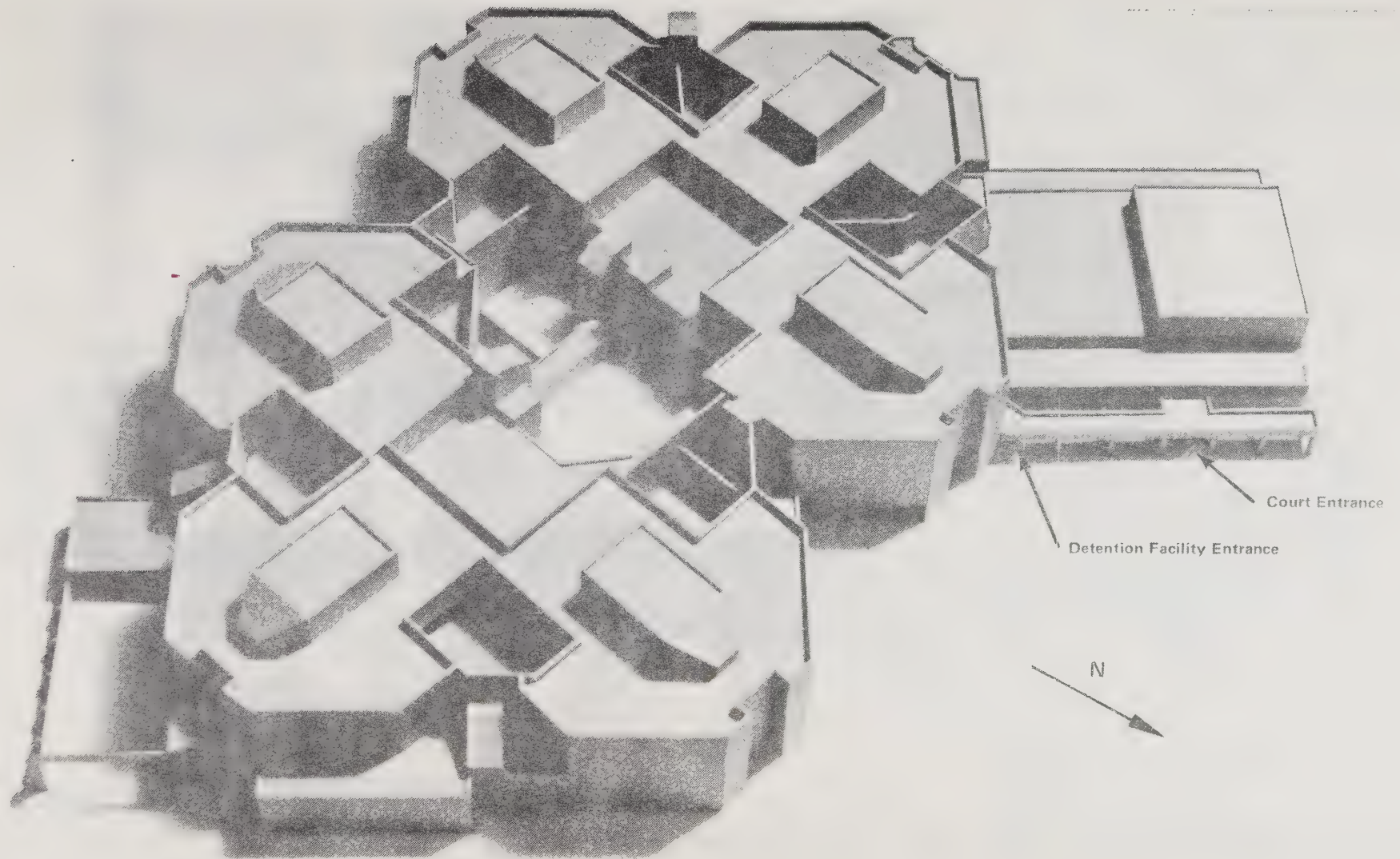


Figure 6
Site Model

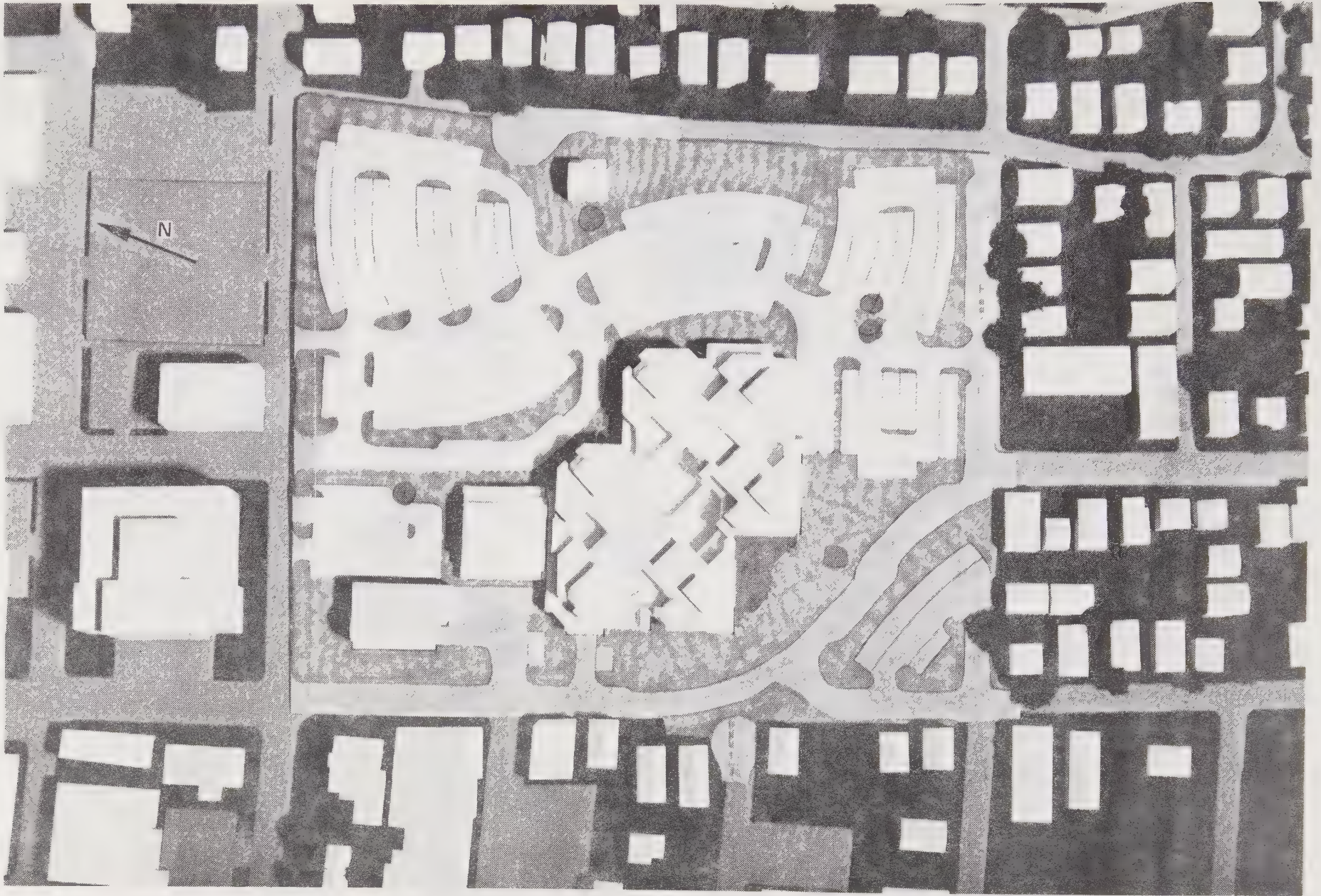
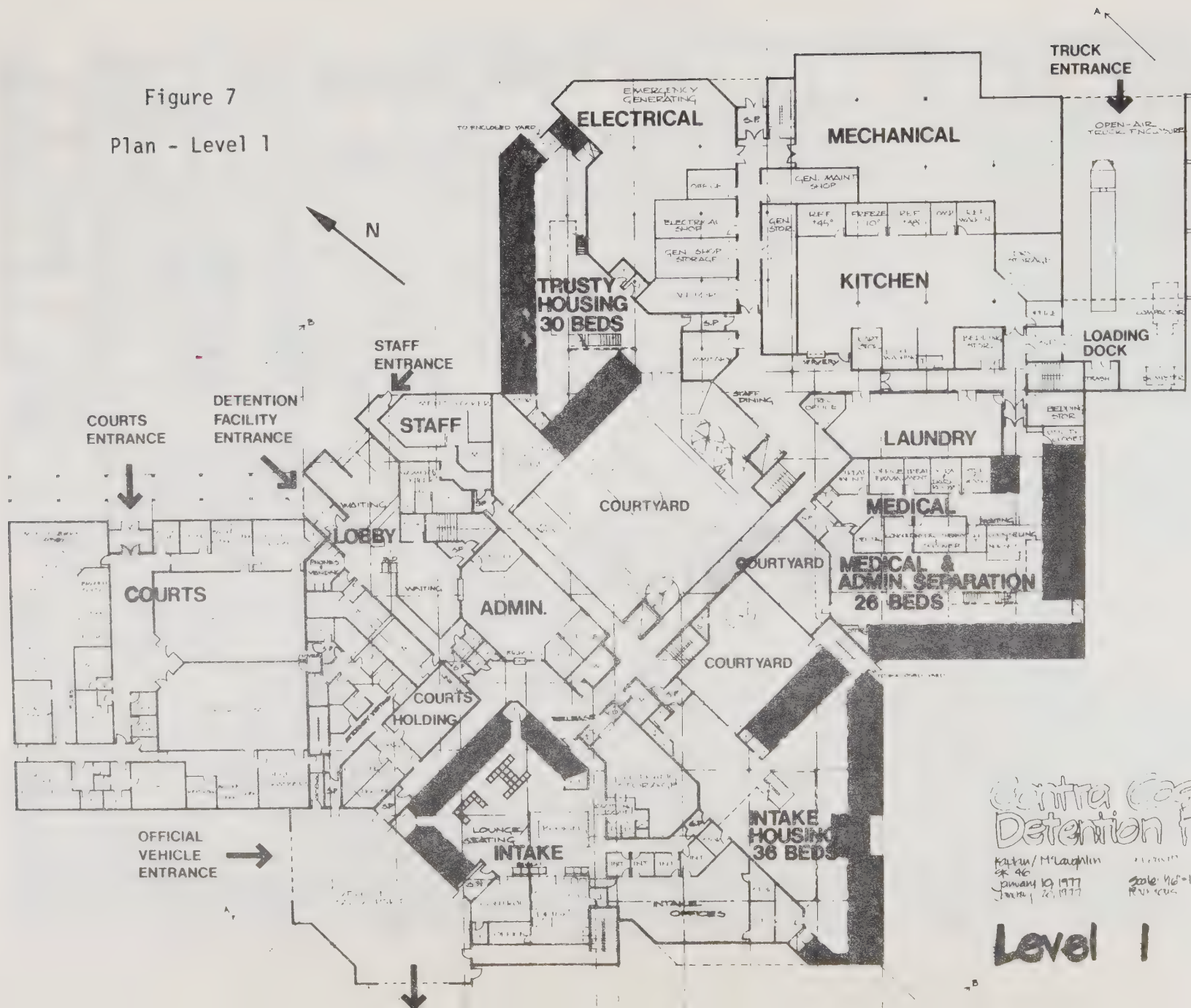


Figure 7
Plan - Level 1



Contra Costa
Detention Facility

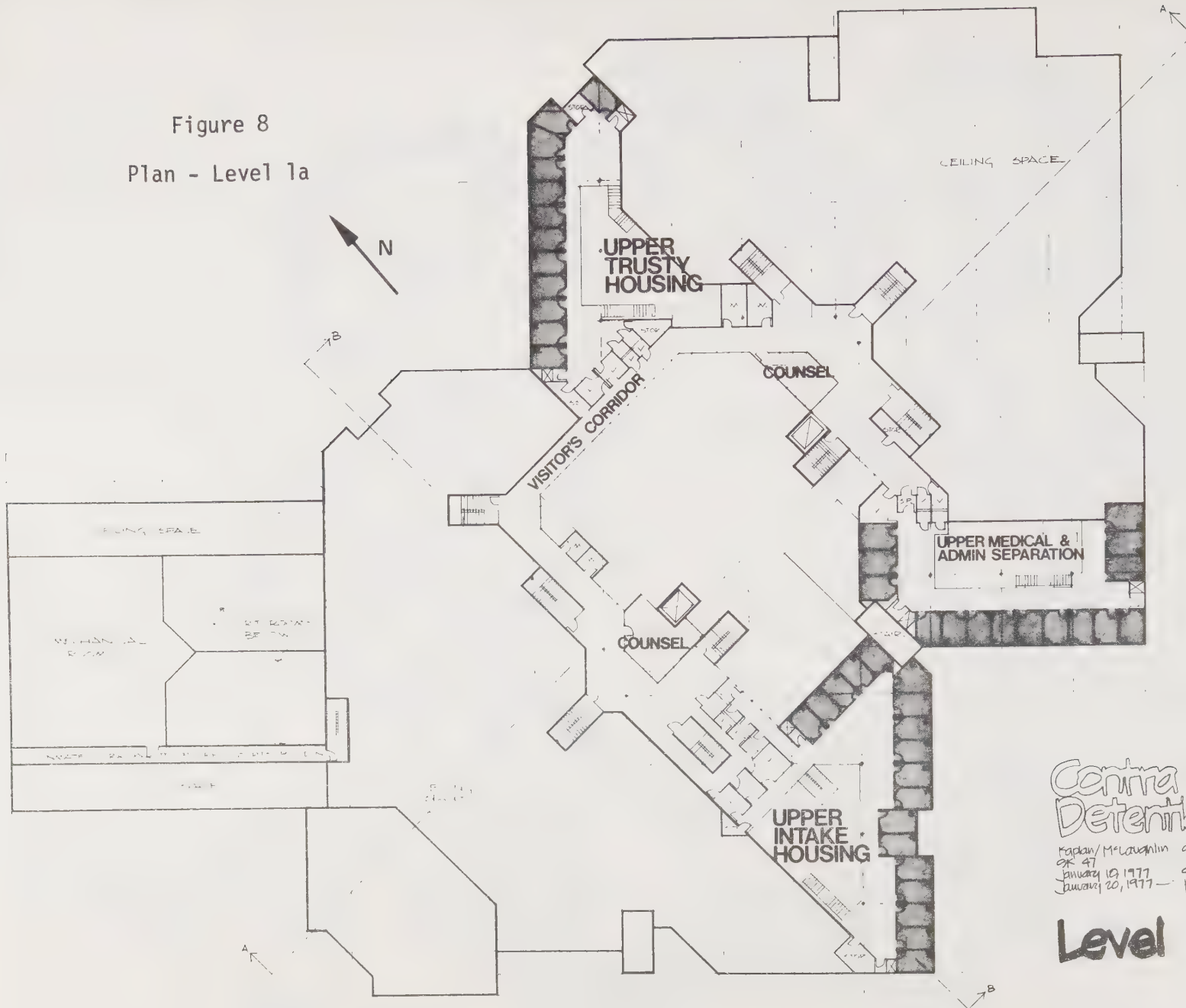
Kalish/McLaughlin
SK 46
January 10, 1977
January 22, 1977

Scale: 1/8" = 1'-0"
RVS: JSC

North

Level 1

Figure 8
Plan - Level 1a



Contra Costa
Detention Facility

Kaplan/McLaughlin
SK 97
January 19, 1977
January 20, 1977
Schematic Design
Scale: 1/8" = 1'-0"
Revisions
North

Level 1a

Figure 9
Plan - Level 2

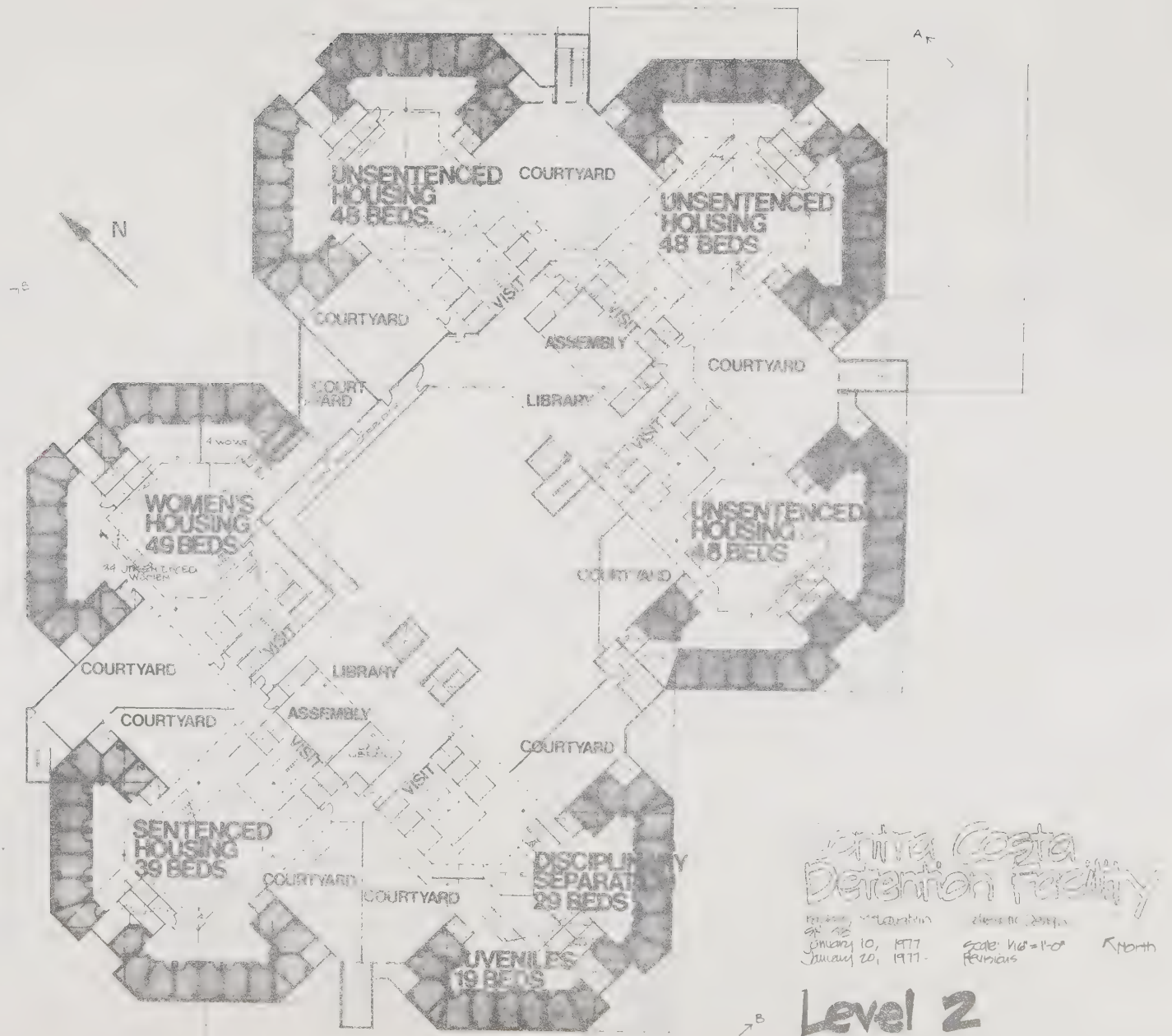
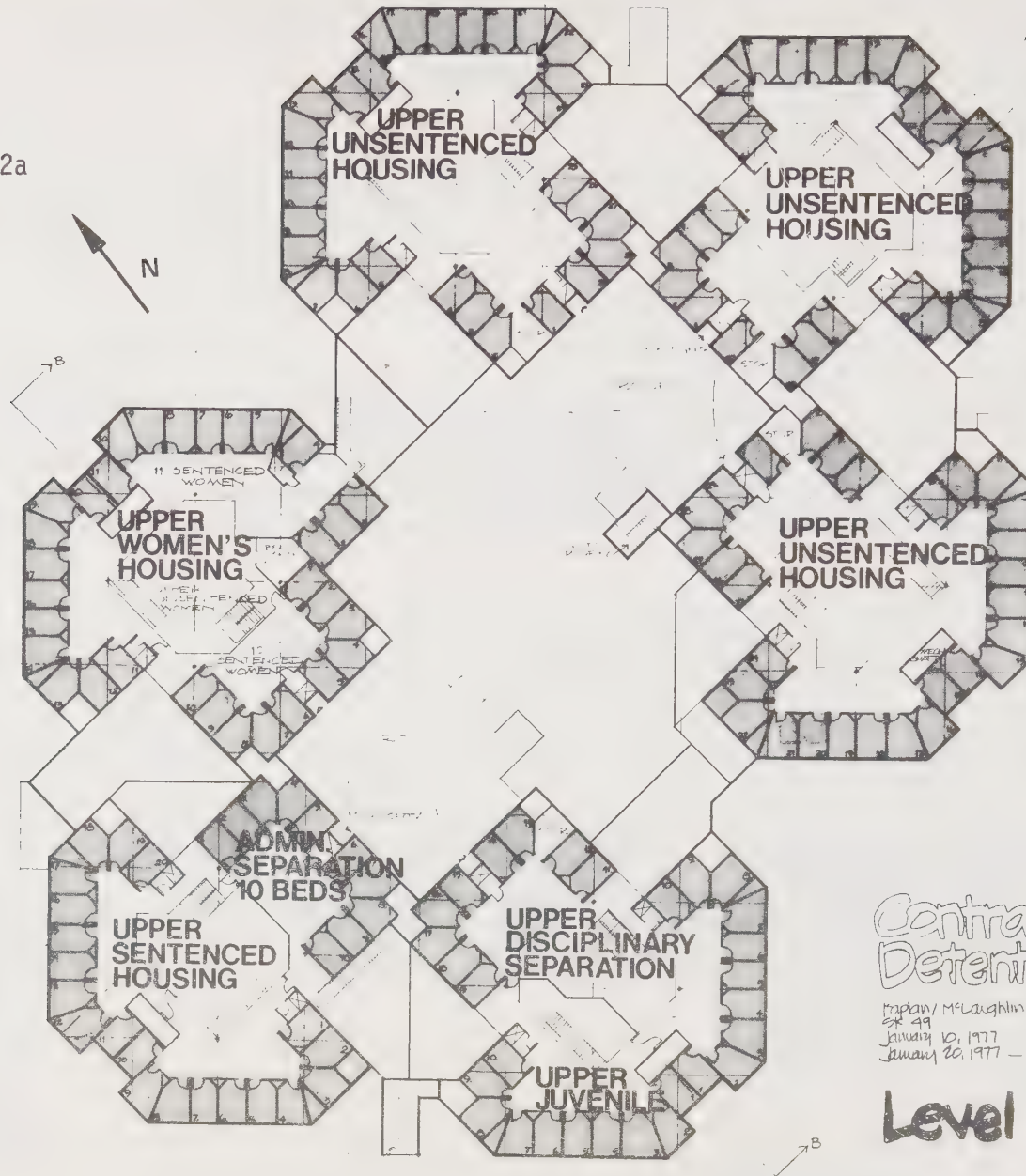


Figure 10
Plan - Level 2a

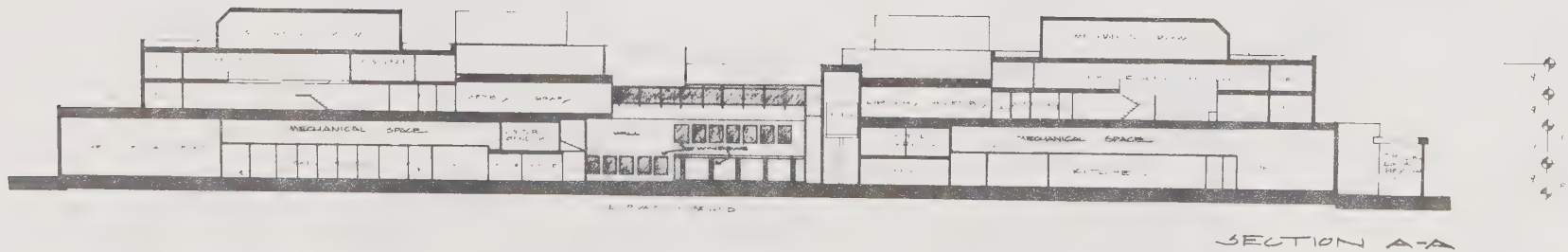
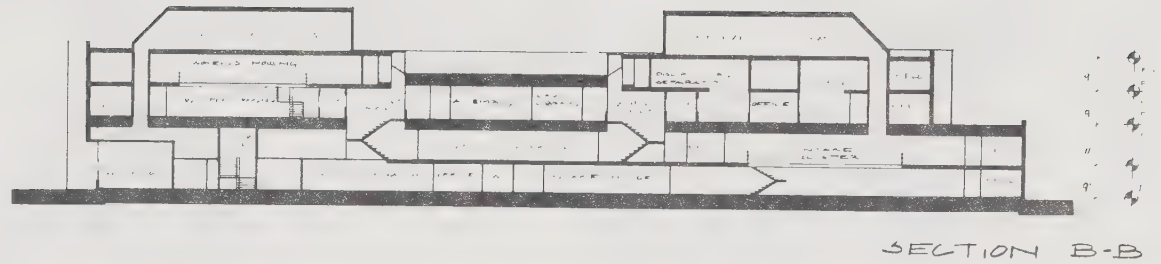


Contra Costa
Detention Facility

Madan/McLaughlin Schematic Design
Jan 99
January 10, 1977 Scale: 1/4" = 1'-0" North
January 20, 1977 - REVISIONS

Level 2a

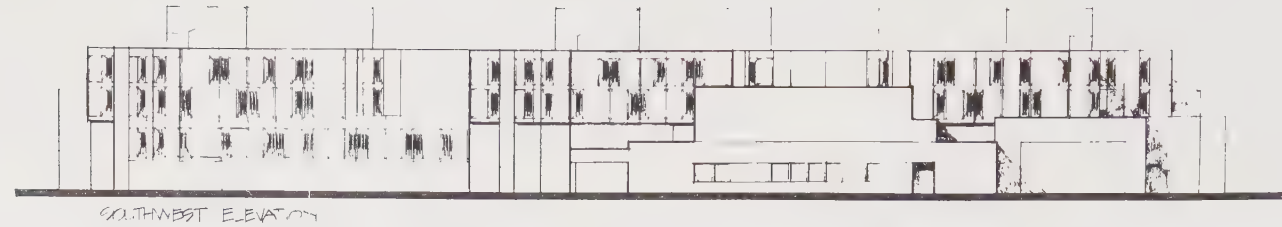
Figure 11
Building Section



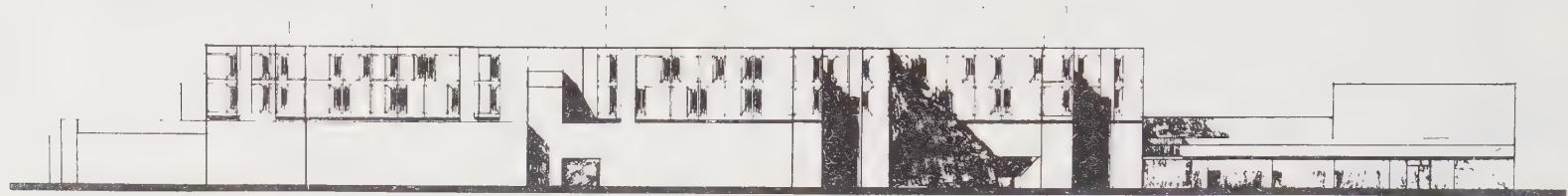
Contra Costa
Detention Facility

Raplan / McLaughlin
January 11, 1977
January 20, 1977
Mechanical Design
Scale: 1/8" = 1'-0"
R. North
Reviews

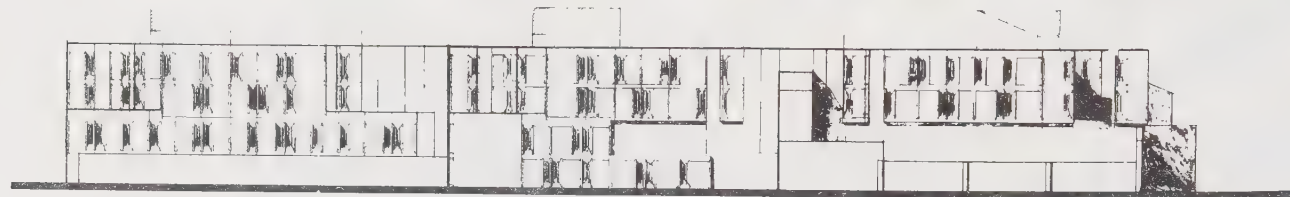
Figure 12
Building Elevation - Scheme B



SOUTHWEST ELEVATION



NORTHWEST ELEVATION



NORTHEAST ELEVATION



SOUTHEAST ELEVATION

Contra Costa
Detention Facility

Caplan/McLaughlin
Jan 10, 1977
Scale: 1/8" = 1'-0"

Elevations

Figure 13
View of Central Courtyard



Contra Costa
Detention Facility

Photo: M. Laughton, Schreyer Design
Jan 20, 1977

View of Central Courtyard

6. Housing - All residential areas will have single occupancy rooms clustered around common multipurpose space for dining and programs with an adjacent outdoor exercise area. A toilet and lavatory is included in each room. Showers will be in the common area or shared by the entire unit. Each cluster will include space for a staff office, staff toilet, food service, pantry, telephones and visting (both contact and non-contact). Housing in each module will be arranged in two levels with approximately one-half of the rooms on the main floor, (See Figures 7 and 8). Each room will have a window and direct access to an outdoor exercise area. Trusty housing will serve the male inmate workers. Intake housing will serve new male inmates until classification is completed. Medical and administrative separation will serve as a medical recovery area and also as a separation area for those who cannot be placed in a normal housing cluster.

Level 1 and 1a housing is 92 beds and includes:

<u>Designation</u>	<u>Capacity</u>
Medical	26 beds
New Intake	36 beds
Trusty	30 beds

7. Program - the areas include offices for volunteer groups, program staff, and a chaplain.
8. Administration - includes space for public reception, administrative office space, inmate records, office machine equipment, staff lounge/classroom, and staff lockers.
9. Kitchen - the kitchen will contain space for the preparation of food for all dining areas within the detention facility. This area will include dry storage, walk-in refrigerator and freezer, dishwashing area, cart and tray storage, food preparation, staff offices, miscellaneous storage areas, and waste separation and disposal.
10. Laundry, Housekeeping, and Maintenance - this area will contain laundry facilities for all of the Sheriff's correctional needs including washing and drying, dry cleaning, clothing storage and wrapping. Janitorial and maintenance areas will be provided.
11. Mechanical/Electrical - this space will contain heating, air conditioning and ventilation equipment, electrical panels, primary telephone and communications service and repair areas for the facility.
12. Main Outdoor Courtyard and Exercise Areas - these areas provide exercise for the trusty housing, medical housing and intake housing units. They also provide light into the interior areas of the detention facility and can provide a place of refuge for inmates during an emergency such as fire.

13. Court Assembly - used for holding prisoners in preparation for movement to court both inside and outside the Civic Center and for prior to their return to housing from court.

Detention Facility - Levels 2 and 2a

Level 2, approximately 55,000 sq ft contains a mixture of male and female housing clusters, areas, and female booking. Male and female areas will be separated physically and visually. Level 2a, approximately 34,000 sq ft, contains the upper levels of these housing areas.

1. Booking (female) - Booking will occupy an area within the female housing module and will include space for records, clothing change, medical evaluation, counseling, and general storage.
2. Housing - Housing areas will function as previously described under Level 1 and 1a housing. The upper levels housing areas will include the following cluster on Levels 2 and 2a.

<u>Designation</u>	<u>Capacity</u>
Women - unsentenced	34 beds
Women - sentenced	11 beds
Women - juvenile	4 beds
Male - juvenile	19 beds
Male - unsentenced	48 beds
Male - unsentenced	48 beds
Male - unsentenced	48 beds
Male - sentenced	39 beds
Male - administration separation	10 beds
Male - disciplinary separation	29 beds

3. Program - Multi-use space for classroom, workroom, counseling, religious, recreation with ready access by inmates. These functions will occupy approximately 2400 sq ft. (Office and storage space for volunteers and counseling staff in on Level 1a).
4. Outdoor Recreation - Outdoor courtyard recreation areas of approximately 1200 sq ft are located adjacent to each housing cluster for immediate access by the inmates. Each area is enclosed with the building walls, with limited or no visual access to the surrounding neighborhood.
5. Library - This space totals approximately 1600 sq ft, includes both the general library and law library, and can be used as a "program" area when required.

Courts

The court area of about 10,000 sq ft is located on Level 1. It is proposed to have one Municipal and one Superior courtroom with the necessary support areas including Judge's chambers, jury deliberation room, conference room, and space for the Municipal Court clerk. The only access between this area and the Detention Facility will be the connection of the two lobby areas and the connection with the inmate circulation system. Separate circulation systems are provided for judges, inmates, and the public. The courts will be designed to accommodate an addition of four courts at a future date. The future courts would be primarily for the Superior Court.

Interior Treatment of Detention Facility

As stated by Kaplan/McLaughlin, Project Architects, security and control have by tradition been dominant features of detention facilities. Some believe this emphasis has increased social alienation and anti-social behavior of those detained within these facilities. A relatively recent response to this concern has been to design jail facilities to hold people more humanely, reduce sensory deprivation and to support an individualized approach to behavior change. Some architectural characteristics frequently used to describe such facilities are that they be inviting to community accessibility; have unobtrusive security features; and that they be smaller facilities more within the scale of spaces found in residential structures.

The facility should ease communication and development of interpersonal relationships and provide opportunities for physical recreation and activity to avoid frustration and boredom which is often a cause of disorder and violence between inmates. These worthwhile aims frequently conflict with the continued necessity for security with operational efficiencies of some aspects of larger, more centralized facilities and with a desire for easy, economical maintenance that often results in hard institutional physical settings. These objectives may also be in conflict with the viewpoint of some community residents who may view, with alarm, what appears to them to be an expensive, luxurious facility. The architect's solution for the interior of the building that responds to these divergent criteria must consider the activity patterns, interactions, expectations and images and values of those within the facility, both the inmate, staff member and the visitor. The intent of this facility is to provide what is perceived to be closer to a normal environment which includes privacy, choice, informality and control. The intent is to develop a relatively non-institutional appearance and feeling. This will be accomplished by 1) reducing the scale of the open areas to that more normally encountered in a residential area; 2) by introducing natural light through use of relatively large window areas; 3) by selecting interior building materials which are durable but which also offer variety of textures and appearances; 4) by creating a variety of space elements within the housing and program areas; 5) by varying the size of the activity areas.

The intent, therefore, is to create an environment which will possibly counteract the effects of boredom and anxiety.

While many of these goals are met by the variation of spaces depicted in the schematic drawings, many details remain to be resolved during the final building design.

It is anticipated that most wall surfaces will be concrete or concrete block. Floor finishes will be vinyl asbestos tile with some areas using commercial carpeting. Furnishings will be generally moveable. Doors will be solid panel wood or steel with view panels. All materials will be chosen following a color scheme designed to reduce the institutional appearance of the facility.

Site Development

Site development includes the removal of existing buildings from the project site, closure of streets, the construction of the Pine Street diversion, the relocation of utilities, construction of storm drainage facilities, construction of permanent parking and the development of temporary parking as needed during construction, both on and off site.

1. Removal of Existing Buildings

There are 20 primary buildings existing on the project site. These include 18 residences, some of which have been converted to County office use, and two doctors' office buildings. These buildings and associated improvements will be demolished.

2. Street Closure and Diversion

The site plan shown on Figure 2 requires the consolidation of the six-block area into one construction site, and necessitates the abandonment, closure, and obliteration of some street segments. These segments are:

- 1) Pine Street between Ward Street and Mellus Street;
- 2) Thompson Street between Willow Street and Court Street;
- 3) Green Street between Willow Street and Court Street;

Although it is currently in use as a public street, Willow Street between Green Street and Ward Street has already been formally abandoned. It will also be closed and obliterated.

The following street reconstructions will be made:

- 1) Pine Street will be diverted at Mellus Street to intercept Court Street at Thompson Street.

- 2) Willow Street will either be extended from Green Street to Ward Street on an alignment and width comparable with that between Green Street and Mellus Street, or reconstructed to a cul-de-sac in the vicinity of Green Street.
- 3) Court Street will be reconstructed to intercept the Pine Street diversion.
- 4) Mellus Street will be reconstructed as a cul-de-sac with its entrance from Court Street and its terminus near its existing intersection with Pine Street.
- 5) Thompson Street will be reconstructed as a cul-de-sac with its entrance from Las Juntas Street and its terminus near its existing intersection with Court Street.

The diversion of Pine Street necessitates some modification in existing street profiles of Court Street to improve sight distance and public safety. Street widths may be increased on portions of Ward, Mellus, and Court Streets.

3. Utility Relocation

Pine Street is a major route for utilities which serve the City of Martinez and Port Costa. The construction of the Detention Facility across Pine Street necessitates the relocation of these utilities. Several alternatives to relocation were considered and some were found to be less satisfactory and more expensive than others. Utilities currently existing in the project area are 1) water; 2) sewer; 3) gas; 4) telephone; 5) cable TV; 6) storm drain; 7) fire alarm and 8) electricity. These utilities will be relocated following the alignment of the Pine Street diversion. After utility relocation, the existing lines will either be abandoned or removed.

The reconstruction of the intersection at Court Street and Ward Street to improve the traffic sight distance on Court Street will necessitate the lowering of a main telephone cable.

The closure of Thompson Street and Green Street will necessitate the rerouting of existing sewer, gas, water, electricity, telephone, and television lines. The utilities are discussed in more detail in Chapter 14, Utilities.

4. Storm Drainage

The disruption of the existing surface drainage system and need to remove site runoff from the project area requires that a storm drain be constructed. Preliminary studies indicate that a 30 to 36 inch diameter pipe running northerly along Pine Street from the project site would be adequate to meet the needs of the proposed project, the Civic Center, and the hillside area to the east. Its terminus would connect to an existing drainage line on the south side of Marina Vista.

An alternate method to meet the storm drainage need would be to increase the size of existing storm drains in either Mellus or Green Streets and divert all site drainage in that direction. This would also require a 30 to 36 inch pipe.

The best alternative storm drain alignment will be developed in conjunction with the City of Martinez during final project design. Chapter 11, Hydrology, discusses the proposed stormdrain system and the alternatives in greater detail.

5. Parking

The construction of the Detention Facility should satisfy three goals:

- 1) Off-street parking removed by the Detention Facility should be replaced.
- 2) On-street parking removed by the closure of existing streets could be replaced.
- 3) The parking needs of the new facility should be met.

Additionally, it would be desirable to create additional parking within the Civic Center.

The extent to which these goals can be met is currently under study. As shown on Figure 2, Kaplan/McLaughlin recommends parking on the site to be limited to about 450 parking spaces. Additional parking on-street and off-street will also be developed.

This scheme results in the first three goals above being nearly satisfied. They can be fully satisfied if the parking areas are developed with the parking density currently in use today, but this appears to develop inadequate landscaping. Parking is discussed in greater detail in Chapter 16, Traffic and Parking. Civic Center parking is currently under detailed study. It appears that more efficient use of existing space could yield a greater parking capacity within the Civic Center and surrounding business areas.

6. Landscaping

As shown on Figure 6, the Detention Facility will include landscaping around the facility itself and in all parking areas. The landscaping shown is conceptual and precedes actual design. The precise nature and extent of the landscaping for the project has not yet been determined. It is apparent, however, that the degree of landscaping has an impact upon the number of parking spaces that can be provided.

The final landscaping solution, therefore, will be a compromise between the need for parking and the need for landscaping, and will take into consideration the significant trees identified in Chapter 8, Biotic Resources.

Construction Activity

During the construction period of approximately 2 years, an estimated average 100 plus workers will be on-site daily with possibly as many as 150 workers on-site during certain phases of the project. Normal work hours for most of the workers will probably be from 7:30 a.m. to 4:45 p.m. The exact hours will be established by agreement with the County and the Contractor to minimize where possible adverse construction impacts.

County office hours are from 8:00 a.m. to 5:00 p.m. During periods when courts are in session, it may be necessary to curtail certain construction activities creating abnormal noise levels. Work hours or days may be altered in order to minimize interference with court proceedings. The projected elapsed time for general construction phases are as follows:

First Year - Excavation, site development, foundation construction and structural frame.

Second Year - Close in entire facility and complete construction.

Heavy equipment required for the project may include cranes, forklifts, heavy earth moving equipment such as bulldozers and loaders and perhaps 25 trucks per day entering and leaving the site. Because of the proposed building foundation design, it is unlikely that piles and pile driving will be required. Temporary sanitation facilities will be provided during the construction period until permanent plumbing fixtures in the new building are connected to utility lines. Temporary parking facilities will be constructed in the vicinity of the project to accommodate parking for workers. Depending upon their location, these may be replaced by permanent parking at the completion of the project. Alternative means of accommodating construction parking are currently under study. During the initial stages of site development all existing surfacing, including asphalt and sidewalks, curbs and paving in the project area and the County owned structures on the site will be removed. This will include foundations, pipes, sidewalks and all other appurtenances. The excess excavating material and construction refuse will be disposed of by the building contractor at a location determined by the contractor and approved by the County.

Energy Consumption Characteristics

The precise energy consumption characteristics of the facility have not yet been determined. Firm estimates of energy consumption will be developed during life cycle cost analyses during the preparation of construction drawings.

The primary sources of energy for heating under consideration for the Detention Facility Project are: 1) natural gas 2) fuel oil 3) electricity 4) solar energy.

1. Natural Gas

Natural gas consumption for new facilities is currently regulated by the California Public Utilities Commission (CPUC). Because of the energy consumed by a facility of this size, it is unlikely that natural gas will be used for heating the detention facility. It will most likely be reserved for use in the cooking and laundry areas, and for backup to the proposed solar water heating facilities.

2. Fuel Oil

It is proposed that fuel oil will be the primary energy source for heating the building. If this option is utilized, it is estimated that the facility will consume approximately 131,300 gallons per year based on initial estimates.

3. Electricity

Electrical resistance heating will probably not be used as a primary heating source within the detention facility because the CPUC regulations allow a maximum of 10% electrical resistance heating. Energy consumption for the remainder of the functions within the Detention Facility other than heating is estimated to be 6,582,000 KWH. (i.e., fan motors, pumps, electrical switching, and lighting).

4. Solar Energy

It is unlikely that solar energy will be a primary source of energy for the detention system. It appears at this time not to be an economical solution for supplying the project's heating requirements although it will probably provide a significant amount of heating for domestic water. The extent to which solar energy is used within the project is currently unresolved and it will be a subject of future consideration during the design process.

It should be recognized that energy consumption and alternative energy sources have become very important in the first months of 1977 and may receive accelerated attention in the months to come. Chapter 14, Utilities and Chapter 15, Energy, present more information on energy usage and alternatives.

Facility Staffing

The Service Program (page VIII-4) estimates the facility to require a total staffing of 134 positions. In general, 43 staff positions will be required to man fixed security posts including central control and each housing cluster; 21 positions will be required for administrative and services functions, including facility supervision, program

coordinators, receptionists and clerks. The facility will require 50 staff positions for roving posts such as shift supervisors, booking staff and other correctional staff. This is a total Sheriff's staff of 114 positions or a ratio of 1 staff member to 3.4 inmates.

In addition to those positions, staff is required from agencies other than the Sheriff's Department. The Probation Department will staff the pre-trial release unit which will require 7 positions. The Public Works Department Buildings and Grounds Division will furnish 2 maintenance staff. County Hospital will furnish the following individuals for medical services: 5 nurses, 5 medics, and a part time doctor and dentist.

Total staffing for this facility as proposed in the Service Program by Facility Sciences Corporation is 134 positions or a ratio of 1 staff member to 2.9 inmates.

The day shift will require the greatest number of staff which is estimated to be 44 positions. The swing shift will require 28 positions and the midnight shift will require 18 positions. Shift relief will require 44 positions. Facility Sciences Corporation estimates the annual staff cost to be \$2,631,400. More detailed information is available in Chapter 22, Economics, and in Chapter VIII of the Service Program.

Inmate Capacity

The Board of Supervisors established an inmate capacity of 370 to 383 beds. The facility as proposed contains 383 beds. The 370-383 bed range was selected considering the population projections made by Facility Sciences Corporation, the Detention Facility Advisory Committee and a consideration of national standards. This figure represents the peak daily population which FSC expects to be reached in 1985 if existing release policies are continued. Implicit in the projection is the assumption that present release policies will be continued or expanded where possible. If these projections remain valid and if there is no significant increase in the release rates, it is anticipated that additional detention facilities would be required in the 1985-1990 period. Facility Sciences Corporation recommended that these additional facilities would be for sentenced persons requiring medium or maximum security housing. Additional space for unsentenced inmates could also be generated if the unsentenced inmate workers are utilized within the facility, or if the juvenile component is not utilized. The FSC population projections are shown in Table 1.

Table 2 shows how the 383 beds are allocated within the facility. There are nine separate housing clusters with the clusters ranging in size from 26 for the medical unit to 48 or 49 for several other clusters. These clusters are further broken down into housing modules which range in size from 4 to 48 beds depending upon the design of the cluster. It should be pointed

TABLE I
INMATE POPULATION PROJECTIONS

<u>Average Daily Population</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
Unsentenced	219	251	285	318	352
Juveniles	13	15	17	19	21
Sentenced	37	43	49	54	60
Trusties	<u>24</u>	<u>27</u>	<u>31</u>	<u>35</u>	<u>38</u>
Total	293	336	382	426	471
<u>Peak Daily Population</u>					
Unsentenced	255	292	333	371	411
Juveniles	15	17	19	21	24
Sentenced	41	47	54	59	66
Trusties	<u>24</u>	<u>27</u>	<u>31</u>	<u>35</u>	<u>38</u>
Total	335	383	437	486	539

TABLE 2
INMATE HOUSING CLUSTERS

<u>Womens Housing</u>	<u>Sub Unit Size</u>	<u>Cluster Size</u>
Unsentenced	34	
Sentenced	11	
Juvenile & Disciplinary	<u>4</u>	
Sub Total		49
<u>Male Housing</u>		
Unsentenced		48
Unsentenced		48
Unsentenced		48
Sentenced	39	
Administrative Separation	<u>10</u>	
Sub Total		49
Disciplinary Separation	29	
Juvenile	<u>19</u>	
Sub Total		48
<u>Intake Housing</u>		36
<u>Trusty</u>		30
<u>Medical and Administrative Separation</u>		<u>26</u>
Total		383 beds

Source: Kaplan/McLaughlin

out that with the exception of the disciplinary, administrative separation and medical housing areas, all other areas will be nearly identical in nature. This will allow flexible utilization of the housing clusters as the nature of the population in the detention facility changes with time, e.g., there may be more than 49 females in the facility at a later date. It would be possible at that time to convert one of the 48-bed clusters or even the 30-bed male trusty unit to female housing.

Projections by FSC (Service Program, pg. 11-22) indicate that the average length of stay in the facility is 6.6 days. This indicates very high turn-over of incarcerated individuals.

FSC also found that when bed distribution is considered, beds are approximately equally occupied by those staying 0-7 days, 8-31 days, and 32-365 days. (One bed can be occupied by seven people staying one day consecutively, or by one person staying seven consecutive days.) Therefore, it is apparent that a very high number of people are released within a relatively short period of time. It is also apparent that a relatively low percentage of inmates may occupy 1/3 of the beds for over 30 days.

Further discussion of capacity is presented in Chapter 5, Inmate Capacity and in the Service Program.

Construction Costs

The current construction costs estimate for the project based on initial schematic design is \$17,087,000, including contingencies. Total project cost is \$19,950,000. This is a preliminary estimate and based upon schematic design, and includes an inflation factor of 9%/yr. Construction bids will be requested from qualified contractors as soon as possible to minimize the effects of inflation and to provide the facility at the earliest possible date. Cost estimates will be revised and updated periodically until all bids are received on the project.

The source of funds for construction are as follows:

- a. General Property Taxes - \$5,150,000
- B. Federal Revenue Sharing - \$14,800,000

Furnishing and Equipment Cost

An initial cost estimate for moveable furnishings and equipment for the Contra Costa County Detention Facility was made by Facility Sciences Corporation. This estimate of \$696,000 will be refined as the specifications are written for the purchase of furnishings. Funds for the acquisition of furnishings for the facility have not been allocated by the Board of Supervisors at the present time. It is anticipated they will be included in the County budget for the fiscal year 1978-79.

Source of Operating Funds

Money required to pay the expenses of operating the new Detention Facility will come from current general tax revenues via budget appropriations by the Board of Supervisors. This is the same procedure that is presently followed with respect to existing jail facilities. Chapter 22 discusses this subject in greater detail.

Disposition of Existing Detention Facilities

It is anticipated that neither the Branch Jail or the present Main Jail in Martinez will be utilized to detain unsentenced prisoners following the opening of the new Detention Facility. The present Main Jail is physically inadequate to continue housing prisoners. The Branch Jail was established as a temporary measure to relieve overcrowding of the Martinez facility. It is the intention of the Sheriff-Coroner to return the building being used to house the Branch Jail at Marsh Creek to a minimum security dormitory for sentenced men as was its original design purpose. As yet no decision has been reached for disposition of the present main jail. Kaplan/McLaughlin, Project Architects, have stated that the existing main jail is unsuitable for housing inmates. It is possible, but expensive to convert the existing main jail to other purposes which are undetermined as yet. It appears at this time that the best course of action would be to demolish the 1944 addition to the main jail, leaving that space for a central plaza. The remaining original 1901 structure could be renovated to accommodate an administrative function.

No firm decision on future usage has been reached at this time except that the main jail will not be used to house any prisoners and the Branch Jail will not be used to accommodate unsentenced prisoners. These issues are discussed at considerable length in Chapter 6, Project Alternatives.

Chapter 3

PROJECT HISTORY

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Administrator's Office
January, 1977

Introduction

The purpose of this chapter is to describe the events, deliberations, and decisions that precede and lead to the currently proposed plans for construction of a new Contra Costa County Detention Facility. The specific events leading to the present plans span approximately a one-year period of time. This background is presented below as a chronological sequence of occurrences. The portions of this chapter from 1901 through the fall of 1974 are essentially the same as the EIR for the previous "Detention Center" project.

Events of 1901

The original jail facility, which is still in use today, was built to house 50 prisoners.

Events of 1944

A north wing addition to the jail, also still in use, was built, expanding the total capacity to 165 inmates.

Events of 1962

On February 13, 1962 the Contra Costa County Board of Supervisors authorized the architectural firm of Confer and Anderson (located in Concord, California) to proceed to develop a master plan for County-owned buildings in downtown Martinez.

Events of 1963

In March of 1963 the County Civic Center plan proposed by Confer and Anderson was completed and published. The plan included an area of downtown Martinez, adjacent to a residential neighborhood, which already contained a number of older, County-owned buildings. The plan concept centered around concentrated, high-rise development in a so-called County "superblock" area, and called for the retention of a few older buildings and the eventual replacement and demolition of many others. Among the buildings to be replaced was the existing Contra Costa County Jail.

On November 12, 1963, the County Board of Supervisors voted to adopt, in principle, the Civic Center plan.

Events of 1964

The 1963-64 County Grand Jury report, published in July, expressed dissatisfaction with what it termed to be the overcrowded conditions within the County Jail. The Grand Jury made specific recommendations for new facilities. The Jury acknowledged the proposed Civic Center location for a new jail but questioned "both the economics and the practicability" of the location.

Events of 1965

The final report of the 1964-65 Grand Jury cited the cleanliness of the County Jail but expressed concern over the complete lack of physical activity available to inmates. It recommended that overcrowding be reduced in whatever way possible.

In addition, it was suggested that the County consider adding an "honor" area for women, similar to the Contra Costa County Rehabilitation Center at Marsh Creek, to any future jail planning, and to give first and second priority in any future County building plans to the construction of a juvenile care facility and an adult detention facility.

Events of 1966

On June 28, 1966 the Board of Supervisors authorized the execution of an agreement with the architectural firm of Frederick L. R. Confer and Associates (successors to Confer and Anderson) for the design of a jail, for the proposed Hall of Justice Complex; the location of which was specified in the 1963 Civic Center plan. The selection of F. L. R. Confer and Associates was recommended to the Board of Supervisors by a County staff committee after a review of the firm's qualifications. The agreement between the County and Confer provided for a total fee of eight percent of a preliminary construction cost estimate of \$4,500,000. The proposed Hall of Justice Complex was to include a new jail, a law enforcement administration building, and a criminal courts building.

On December 13, 1966 the Board approved schematic plans and estimates for the entire Hall of Justice Complex. F. L. R. Confer and Associates estimated at that time that the construction cost would be about \$8,000,000. The Board further voted to seek voter approval of a bond issue to finance the Complex. This approval was to be sought in the April, 1967 election.

In December the Grand Jury, in their final report for 1966, expressed concern about overcrowded conditions and the "high rate of escapes" from the County Jail. The jurors recommended that a new detention facility be built "as quickly as funds are available" at the Marsh Creek Rehabilitation Center.

Events of 1967

On April 18, 1967, County voters defeated a proposed \$10,250,000 bond issue for the Hall of Justice Complex. Of a 35 percent voter turnout, only 27 percent favored the issue. On September 19, the Board of Supervisors ordered F. L. R. Confer and Associates to defer further work on the Hall of Justice.

The 1967 Grand Jury (in their December report) urged immediate construction of a new jail "in Martinez or elsewhere if more feasible and practical."

Events of 1968

On February 13, 1968, the Board of Supervisors received communications from the County Sheriff's Department and the County Administrator to the effect that the County Jail was overcrowded. This condition remained even though, according to the Sheriff, every means available to decrease the jail population, such as "own recognizance releases" were being fully utilized. The Board acknowledged the communications and directed the Administration and Finance and Revenue and Taxation Committees of the Board to "review the overall situation with respect to County jail facilities, including finance." Based upon the committee's recommendations, the Board, on March 26, voted to again seek voter approval of jail bond financing in the November 5, 1968 election.

At the August 13, 1968 Board of Supervisors meeting, the League of Women Voters suggested that a committee of 100 citizens be formed to inform County voters on the need for a new jail, and the importance of approving the \$6,750,000 bond issue in the November election. The Board agreed with the suggestion and directed that such a committee be formed. On August 27, however, the Board decided that there was not enough time to properly inform the voters on the jail issue before the November election, so the Board removed the issue from the November ballot. Further action was deferred until after January 1, 1969.

Despite this deferral, the Board of Supervisors, on December 3, appointed 100 citizens to the "Committee of 100 for Jail Bonds." As in previous years, the 1968 Grand Jury once again deplored the inadequacy of the existing County Jail.

Events of 1969

On June 23, 1969 the Jail Study Committee of 100 (formerly the Committee of 100 for Jail Bonds) reported its findings to the Board of Supervisors. The numerous recommendations of the committee included the following:

As long as the present facility remained in use certain changes should be made in its operation, including:

- the establishment of an exercise program for inmates;
- the establishment of a minimum security jail at Marsh Creek as an interim method to relieve overcrowding and to provide broader segregation of prisoners; and
- the formation of a "Blue Ribbon" committee to study other kinds of temporary facilities and innovations in arrest procedures.

A new jail should be built and use of the old facility as a jail discontinued as soon as possible. The new jail should include the following features:

- maximum capacity of 500 persons;
- adequate booking and holding facilities for initial confinement;
- interview and visiting rooms;
- a prisoner exercise area;

- medical examination and treatment rooms;
- modern kitchen facilities;
- security provisions to permit fluid movement of prisoners within the jail as well as to nearby courts;
- confinement of no more than 16 persons in the same cell or day room at one time;
- a sufficient number of cells to guarantee segregation of prisoners in accordance with California State Department of Corrections regulations;
- location in the county government complex of Martinez in order to maintain close proximity to the law enforcement and court facilities;
- structural and foundation provisions to allow for the future addition of court and law enforcement facilities to the building; and
- incorporation of all facilities included in the jail portion of the 1966 plans drawn by Confer and Associates.

The Board of Supervisors should undertake a special study of future uses and/or disposal of the existing jail, excluding continued use as a place for human confinement.

Out of six alternative methods of financing a new jail, including general obligation bonds (similar to those voted down in 1967), non-profit corporation bonds, a lease-purchase from the County Retirement Board, pay-as-you-go, a special five-year tax levy for a capital improvement fund and a joint exercise of power agreement, the committee recommended pay-as-you-go financing. The committee believed that project construction costs should be paid on an on-going basis from current tax revenues. The committee recommended this method because they believed that it did not require voter approval, all interest costs would be avoided, construction could begin immediately even though all funds needed for the total project had not been accumulated, and it was believed to be the simplest method. 1/

1/ Jail Study Committee of 100 Report, page 12.

On June 24, the Board of Supervisors referred the Committee of 100 report to its Administration and Finance Committee for comments and recommendations which were to be made by August 5. On August 5, acting on committee recommendations, the Board decided to proceed with plans for a new jail. The Board contracted with the architects, F. L. R. Confer and Associates, to make arrangements for preparation of final jail plans.

Once more in December the County Grand Jury urged the Board to proceed with the construction of a new facility.

Events of 1970

F. L. R. Confer reported cost estimates to the County Administrator on March 25, 1970 reflecting three alternative courses of action with respect to new jail facilities.

- The entire Hall of Justice Complex, if let out for bids by April 1, 1971, could be expected to cost \$13,510,126.
- The jail with supporting foundation spaces for the future courts and administrative structures could be expected to cost \$5,718,321 as of April 1, 1971.
- The jail alone would probably cost \$5,635,170.

On April 28, 1970 the County entered into a revised architectural contract with F. L. R. Confer for design of a new facility as outlined in the second option above. At the August 28 Board meeting, the Board voted to impose a special tax levy of \$.10 per \$100 of assessed valuation to be placed in an accumulative capital outlay fund. While the fund monies could not specifically be designated for new jail financing, it was generally understood that they would be appropriated for that purpose at a later date. In further action, the Board decided, on September 1, to finance the entire jail construction cost on a pay-as-you-go basis through a continuation of the \$.10 tax levy. It was anticipated that it would require a total of three years to pay for the project.

On December 1, 1970 F. L. R. Confer published preliminary specifications along with a preliminary cost estimate of \$10,186,323 for the new jail.

The 1970 Grand Jury took a very strong stand on the issue of a new County Jail by severely castigating both the Board of Supervisors and the County Administrator for failure to "take the proper leadership," "failure historically to act promptly and in an efficient and effective manner in this instance" and for failure to "do a better job of public relations on such important matters in order to get communitywide support." This Jury also wrote to the Board of Supervisors on several occasions during the year to express concern about the slow pace of jail construction proceedings.

Events of 1971

The Board of Supervisors approved F. L. R. Confer's preliminary plans and cost estimate of \$10,186,323 at their February 2, 1971 meeting. On September 21, the Board requested that the Human Resource Committee (of the Board) pursue exploration of alternatives to detention and imprisonment with the Bay Area Social Planning Council, a non-profit corporation which provides consulting services for volunteer and governmental agencies.

Two lawsuits were filed against the County over the condition of the jail. One resulted in a court order to the Board of Supervisors to improve the detention facilities.

Two major prisoner disturbances occurred in October and November of 1971. These disturbances caused property damage in particular areas of the jail but fortunately no one was seriously injured. The Sheriff attributed much of the problem to the overcrowded jail conditions.

On December 7, 1971 the County Administrator recommended that a combination of pay-as-you-go and retirement fund lease option financing be utilized to provide the required jail construction funds. The Board referred the report to the Administration and Finance Committee.

The 1971 Grand Jury summed their findings on the jail by saying "it is inhuman to operate under existing conditions."

Events of 1972

A letter from the Contra Costa County Consolidated Fire District to the Sheriff dated February 10, 1972 detailed 10 major and two minor alterations that would have to be made to the existing jail in order for it to comply with the current County and State fire ordinances.

On February 11, the County Human Resources Committee held a meeting to consider possible alternatives to building a new jail as planned. The meeting included representatives from the Sheriff's Office, the Board of Supervisors, the County Counsel's Office, the Juvenile Justice Commission, representatives from the Bay Area Social Planning Council and others. Each group present stated its views on the proposed jail. There was considerable diversity of opinion on the planned facility and no consensus was reached. The Supervisors present stated that they would report to the entire Board on the possible need for a formal study of the various alternatives.

On April 4, the Board approved and adopted three recommendations from the Human Resources Committee:

"That the current momentum be maintained toward the construction of the planned jail facility, and that the County Administrator's Office, the Sheriff's Office, and the architect be instructed to not break stride, but to continue the countdown toward the financing and construction of the full facility;

That the Bay Area Social Planning Council be retained as a contractor to the County to explore in depth, but as expeditiously as possible, the various alternatives to incarceration as they relate to the size and scope of the proposed jail facility;" and

"...that there be a pairing up of the two projects and that the implementable portions of the alternatives study be applied wherever possible to the physical characteristics of the new detention facility...."1/

On April 19, 1972 the Martinez City Council voted unanimously for a resolution opposing construction of the County Jail, as planned, in downtown Martinez. The Council's resolution specifically called out the size and proximity to a residential neighborhood as being unacceptable.

1/ Contra Costa County Board of Supervisors order dated April 4, 1972

In May the Board of Supervisors directed the architect to proceed to prepare final jail plans. During the same month, as an emergency measure, the Branch Jail at the Marsh Creek Rehabilitation Center was opened by converting a sentenced prisoner honor dormitory into a minimum security, unsentenced facility. The Branch Jail was designated to handle overflow from the main jail.

On May 30, 1972 the County entered into an agreement with the Bay Area Social Planning Council to "explore in depth, but as expeditiously as possible, the various alternatives to incarceration as they relate to the size and scope of the proposed jail facility." At their July 11 meeting, the Board heard from Mr. Radke, a Martinez Councilman, who urged on behalf of the City Council that the Board consider alternatives to, and the community impacts of, the proposed facility.

Other important events of 1972 included:

On August 10, the Martinez Human Resources Commission passed a resolution opposing the location and architecture of the proposed jail.

A revised cost estimate was prepared by the architect on September 15, showing an estimated cost of \$12,058,748.

On October 13, the Bay Area Social Planning Council report was published. 1/

On November 15, the Martinez City Council reaffirmed its opposition to a large jail facility adjacent to a residential neighborhood. The City Council endorsed the Bay Area Social Planning Council's "two jail proposal" and suggested that the County investigate using the property formerly occupied by the Peyton Chemical Corporation as an alternative to the planned jail site.

The County Board of Supervisors held a public meeting on November 30 to discuss the proposed jail construction and in particular to discuss the recommendations of the Bay Area Social Planning Council. Many participants spoke in favor of the "two jail proposal" including:

- The Mayor of Martinez
- The East Hillside Neighborhood Association
- The Contra Costa Juvenile Justice Commission

1/ The Bay Area Social Planning Council's report, along with most other documents mentioned in this E.I.R. are part of the official County record and are available for inspection at the offices of the Clerk of the Board, County Administration Building, Martinez.

On October 21, the Martinez Planning Commission made the following determination on the proposed facility:

- "The proposed use is consistent with the General Plan designation of the site for Governmental Facilities.
- The facility design is inconsistent with the General Plan policy that governmental facilities shall conform to the character of the community in terms of height and bulk. At approximately 100 feet tall, the proposed building is substantially out of character within the community. At an estimated 180,000 square feet, the building is three times the size anticipated in the General Plan, as articulated in the zoning ordinance, for this site. The building setbacks are substantially less than would be expected under the General Plan and conforming zoning regulations." 1/

On September 1, 1974, Mr. Arthur G. Will became Contra Costa County's third County Administrator, replacing Mr. J. P. McBrien who retired in July. Residents for Density Control who urged consideration of the Peyton Chemical property as the site for the new County Jail, which the County contracted with Arthur Young & Company to prepare a Draft Environmental Impact Report on this proposal.

On December 8, 1974, the Federal Law Enforcement Assistance Administration (LEAA) notified the County Sheriff's Department that three complaints had been received by LEAA in Washington, D.C. from Contra Costa County residents, alleging discrimination on the basis of race, national origin and sex in the employment practices of the Contra Costa County Sheriff's Department. LEAA advised the County that an investigation and evaluation of these allegations would be performed. If the alleged violations of the law are found to exist, the people of the County face the possibility of losing state and federal money to the County Jail.

By Board order of November 12, 1974, the Supervisors acknowledged receipt of a letter from the Superior Court unanimously reaffirmed their support of the Board's decision to construct a new jail with court facilities on the proposed construction site. The Mayor further suggested that the City work with the County to find an alternative site for the facility.

1/ Letter from the City of Martinez Planning Director to the County Public Works Department dated October 21, 1974.

On March 23, the County Administrator submitted a report to the Board of Supervisors entitled "Alternatives in Constructing a New County Jail." This report detailed considerations by the County staff relating to different jail facilities, including, among others, the two jail proposal. The Administrator recommended, primarily on the basis of cost, the already planned facility, on the Civic Center site. A capacity reduction to 400 inmates was also recommended.

On April 13, the Corrections and Rehabilitation Task Force of the California Council on Criminal Justice in a survey of county jails identified Contra Costa County as "Priority Number One" for improvement in jail facilities. The Task Force concluded, "There is an immediate need to relieve the overcrowded conditions that exist at the main jail."

On April 20, the Mayor of Martinez again wrote to the Board of Supervisors reiterating Martinez opposition to the Civic Center jail site. On April 24, the Board of Supervisors held their most definitive meeting to date on the question of building the new jail. The Board voted specifically to:

- Build a jail with a capacity of 308-350 inmates;
- Use the proposed Civic Center site;
- Direct the Acting Sheriff-Coroner and the architect to review the jail plans with Mr. Fred Moyer, Director of the National Clearinghouse for Criminal Justice, Planning and Architecture; and
- Include court facilities for one municipal and two Superior Courts.

At the meeting it was stated by a Board member that the citizens of Martinez had decided not to oppose the construction of the jail on the Civic Center site, possibly since construction "at an alternate site might raise the possibility that Martinez would no longer be the County Seat." The Board, on May 8, ordered Confer, Crossen and Nance to resume work on jail plans in accordance with the Board's April 24 decision.

Other events of 1973 included:

On May 9, Mr. Fred Moyer, Director of the National Clearinghouse for Criminal Justice, Planning and Architecture, met with County staff to review the County Jail plans and on May 25, submitted written comments on the plans to the Board of Supervisors.

On June 7, the Martinez Human Resources Commission wrote to the Board of Supervisors asking them to reconsider their April 24 decision. The Board of Supervisors replied that the decision was made "after extended deliberations and hearings and that further delay is unwarranted."

In August, the Board appropriated \$7,500,000 in Federal General Revenue Sharing funds for the new jail.

On November 13, the County Administrator reported to the Board in detail on the effect of construction price inflation (via delays in starting the jail project) on the cost of the jail. The report stated that based on inflation adjustments to the last construction cost estimate, the County did not have sufficient funds to start construction and urged immediate decisions by the Board with respect to financing and commencement of jail construction "otherwise escalating costs will place the development beyond financial reach." The Administrator offered two alternative courses of action for the Board's consideration as follows:

- "Construct the jail (and court structure) at the Martinez site pursuant to the decision of the Board of Supervisors on April 24, 1973. If this is to be done, additional funds must be made available in the 1974-1975 budget from revenue sharing monies and through application of an appropriate capital outlay tax (not levied in 1973-1974).
- Construct a less costly jail as a one level structure on a large plot of land (which would have to be acquired) in the Concord-Walnut Creek area where plans can be developed not only for the jail but also for a municipal court building (to serve both the Mt. Diablo Municipal Court and the Walnut Creek-Danville Municipal Court and also a criminal court department of the Superior Court." 1/

The Board referred this report, along with other jail related items to the Board Committee, the County Administrator and the County Sheriff-Coroner for study.

Throughout 1973 Contra Costa County sought federal funds for the construction of a work furlough center. In January of 1974 a grant in the amount of \$625,000, federal funds, was received. The center to be located in Richmond.

1/ Memo from the County Administrator to the Board of Supervisors, dated November 12, 1973, entitled "Financing of Construction of New County Jail."

The 1973 Grand Jury detailed some of the deficiencies of the old jail and went on to say that it must be replaced promptly. The Jury acknowledged, and documented, some of the disagreement over the present plan, but also stated, in essence, that anything new would be better than the old facilities and that in spite of objections the new facility should be built, as planned, as soon as possible. The Jury was emphatic on this latter point.

Events of 1974

On February 13, the Board accepted revised cost estimates and plans for a 343 inmate facility as approved in the April 24, 1973 Board meeting. The revised estimate was \$16,314,990 for the Detention Facility only, plus \$1,993,920 for the three courtrooms for a total of \$18,308,910 for the entire facility. This estimate represented a 35 percent increase over the September, 1972 estimate (comparing jail facilities only). The Board directed Confer, Crossen and Nance to complete final construction plans and specifications.

Other events of 1974 included:

On April 29, the Foreman of the 1974 Grand Jury appeared before the Board of Supervisors to urge immediate commencement of jail construction.

On August 1, Confer, Crossen and Nance reported to the County Public Works Department that the construction cost estimate had risen to \$18,633,166 for the Detention Center and \$2,154,907 for the courtrooms for a total of \$20,788,073.

On August 12, the County Public Works Department reported to the County Administrator's Office that the most recent construction cost estimate from Confer, Crossen and Nance might not be high enough. Public Works indicated that the construction cost may be as high as \$23,716,658.

In August, the Board appropriated another \$7,500,000 in revenue sharing funds to the project.

On October 2, the County Public Works Department was advised by the City of Martinez Planning Department in response to the mandatory referral process that the proposed jail facility did not meet the City's zoning guidelines with respect to height, size and overall bulk; pending the final decision of the Planning Commission.

On October 21, the Martinez Planning Commission made the following determination on the proposed facility:

- "The proposed use is consistent with the General Plan designation of the site for Governmental Facilities.
- The facility design is inconsistent with the General Plan policy that governmental facilities shall conform to the character of the community in terms of height and bulk. At approximately 100 feet tall, the proposed building is substantially out of character within the community. At an estimated 180,000 square feet, the building is three times the size anticipated in the General Plan, as articulated in the zoning ordinance, for this site. The building setbacks are substantially less than would be expected under the General Plan and conforming zoning regulations." 1/

On September 1, 1974, Mr. Arthur G. Will became Contra Costa County's third County Administrator, replacing Mr. J. P. McBrien who retired in July.

On November 1, at the recommendation of the new County Administrator, the County contracted with Arthur Young & Company to prepare a Draft Environmental Impact Report on this proposal.

In a letter dated November 8, the Federal Law Enforcement Assistance Administration (LEAA) notified the County Sheriff's Department that three complaints had been received by LEAA in Washington, D. C. from Contra Costa County residents, alleging discrimination on the basis of race, national origin and sex in the employment practices of the Contra Costa County Sheriff's Department. LEAA advised the County that an investigation and evaluation of these allegations would be performed. If the alleged violations of the law are found to exist in fact, the County faces the possibility of losing its federal monies.

By Board order of November 12, 1974, the Supervisors acknowledged receipt of a letter from the Superior Court unanimously reaffirmed their support of the Board's decision to construct a new jail with court facilities.

1/ Letter from the City of Martinez Planning Director to the County Public Works Department dated October 21, 1974.

As recommended earlier by the Committee to Consider Rehabilitation Programs for Incarcerated Persons, the Board, on December 17, 1974, approved a recommendation of its Administration and Finance Committee to designate the Contra Costa County Criminal Justice Agency as the body for continuing study and evaluation of the correction system in liaison with the Contra Costa County Mental Health Advisory Board. The Board also ordered that other recommendations of the Study Committee be reviewed as part of the 1974-1975 budget process.

In an interim report dated December 30, 1974, a sub-committee of the 1974-1975 Grand Jury recommended that the County stop the planning of the new jail in order to redesign the facility.

Events of 1975

By letter dated February 28, 1975, Senator John A. Nejedly expressed his opposition to the multiple occupancy cells in the proposed jail to the Chairman of the Board. In a following March 12, 1975 letter, Senator Nejedly again pointed out the need for single occupancy cells in the new jail. The Board requested the County Counsel to review the law on single cells and report back to the Board.

On March 18, 1975 and March 25, 1975, the Contra Costa County Planning Commission held public hearings on the Draft Environmental Impact Report for Contra Costa County Criminal Justice Detention Facility. Following the close of the hearing, the Commission referred the testimony to staff with directions to prepare a response document. The Planning Commission approved the Environmental Impact Report and forwarded it to the Board of Supervisors by Planning Commission Resolution No. 46-1975 dated April 12, 1975.

In Board Resolution No. 75/440, adopted on January 10, 1975, the Board gave final approval to the Environmental Impact Report and the project plans and determined to proceed with construction.

The plans by Citizens for Community Involvement to circulate an initiative petition stopping any further activity on the proposed jail were communicated to the County by Mrs. Louise Clark on May 25, 1975.

Senator Nejedly introduced SB 632 on March 20, 1975 which would have prohibited the construction of jails which provides for the occupancy of more than one person in each cell. Senator Nejedly requested a meeting with members of the Board regarding this legislation on June 23, 1975.

Following a meeting between Senator Nejedly and Supervisors Moriarty and Dias, on August 19, 1975, the Board agreed to provide that one-third of the total bed capacity in the new jail would be single cells. Senator Nejedly agreed to amend SB 632 to accommodate the position of the County. Upon the request of Senator Nejedly, SB 632 was subsequently not acted upon by the State Legislature.

Following the City of Martinez' declination to vacate a portion of Willow Street for the new facility, the Board initiated condemnation action on August 25, 1975.

In September, the William Simpson Construction Company was hired to analyze the cost of building the proposed new facility.

The initiative petition to curtail all further activity on the proposed jail was certified by the County Clerk on December 15, 1975 to contain enough valid signatures to qualify for adoption by the Board of Supervisors on submittal to the electorate. The Board asked the County Counsel to advise them of their available options (which was presented in a January 15, 1976 memorandum to the Board).

By memorandum entitled "Contra Costa County Criminal Justice Detention Center and Court Addition" dated December 22, 1975, the County Administrator's Office reviewed the status of the jail project, provided current construction cost data, and presented the Board with four alternative courses of action:

1. Proceed with the Project as Planned

This course of action would require an additional \$6 million because rapid inflation during the preceding two years had pushed the cost of the project to an estimated \$26 million.

2. Construct the Detention Center Incorporating Recommended Cost Reductions.

The William Simpson Construction Company, who prepared the cost estimate for Alternative 1, suggested cost reductions totalling \$5.8 million. Upon review of these suggestions, the Sheriff and the Public Works Department concluded that modifications reducing the cost by \$1.2 million were achievable without a detrimental effect on the project and as a consequence opposed this option.

3. Redesign the Detention Center on the Same Site Within Available Funds.

Based on consultations with other agencies planning detention facilities, the County Administrator estimated that a redesigned and possibly smaller jail, without courts, could be built for \$16.7 million in the Martinez Civic Center.

4. Construct a New Detention Center at a New Site.

This alternative would involve a site outside of downtown Martinez and would probably take longer to accomplish, but could be done for the \$20 million available. Also, the report indicated that this approach would add considerable transportation costs to the operation of the facility.

Events of 1976

In reply to a citizen suggestion and in an effort to explore all possible options to relieve, on a temporary basis, the overcrowding in the jail, the Board on January 16, 1976 was sent a report from the County Administrator on the feasibility of using a surplus naval vessel as a jail facility. This was deemed an impracticable solution by the Administrator's Office.

At the regularly scheduled meeting of February 3, 1976, the Board of Supervisors considered both the December 22, 1975 Administrator's report on the four alternatives facing the Board for the jail project and the jail initiative.

Following the testimony of several persons, the Board decided to order the redesign of the jail project along the lines of Alternative 3 or 4 (new design either in the Civic Center or on a site outside downtown Martinez).

At this point the old plans were officially abandoned and the design of the project that is the subject of this Environmental Impact Report began.

HISTORY OF REDESIGNED DETENTION FACILITY

The week following the abandonment of the jail plans (February 10, 1976) the Board of Supervisors terminated, without prejudice, the contract with Confer, Crossen and Nance for additional services and authorized the Public Works Director to advertise for proposals for a new architect, architectural pre-programmer, and a construction manager.

The County Administrator also presented two draft Resolutions dealing with a policy statement to guide the redesign effort and the establishment of a citizen and staff advisory committee to work along with the redesign effort. Both draft resolutions were widely circulated among interested citizens for their review and comment. A report dated February 26, 1976 was filed with the Board in which all the comments received on the two draft resolutions were summarized.

On March 1, 1976 the Board of Supervisors was informed that the redesign effort for the jail did not jeopardize the \$15 million in Federal Revenue Sharing funds available for this project.

The redesign effort formally got underway on March 2, 1976 when the Board adopted Resolution No. 76/201 which established County policy regarding the redesign. In this resolution, the Board of Supervisors made certain determinations of fact and need, set down a guiding policy, and committed themselves to following appropriate national guidelines.

On the same day, they also established the Detention Facility Advisory Committee (Resolution No. 76/202).

"Stop procrastinating and proceed with prompt and positive action in the building of a new jail" was the message the 1975-1976 Grand Jury gave the Board in their Resolution No. 1 dated March 8, 1976.

Answering a question raised by the Detention Facility Advisory Committee, the Board, on April 20, 1976, directed the committee to only consider one jail for this project.

During the month of April, the Detention Facility Advisory Committee, under the chairmanship of Coleman F. Fannin, organized itself into three subcommittees (location, capacity, and design questions) and began holding weekly both regular and subcommittee meetings.

As a result of this effort, Judge Fannin was able to present to the Board on May 18, 1976 the Committee's recommendation on where the jail should be built. The Committee said to build it in the Martinez Civic Center.

At the end of a long selection process involving the screening required by National Guidelines, the Board selected its consultants for the new project on May 25, 1976.

The architect-engineering firm of Kaplan/McLaughlin of San Francisco was selected along with Facility Science Corporation of Beverly Hills as the programmer, and Turner Construction Company of San Francisco as the construction manager.

Following six weeks of bi-weekly meetings, the Detention Facility Advisory Committee, also on May 25, 1976, recommended that the capacity for the new jail be 338 persons.

On May 25, 1976, Judge Fannin resigned from the Detention Facility Advisory Committee, giving as his reason the needs of his judicial office.

On June 7, 1976, William F. Wainwright, the Committee's Vice-Chairman, was elected by the group to be their new chairman.

In response to a June 18, 1976 letter from Mr. William A. Wainwright, in his capacity of Chairman of the group who circulated the Jail Initiative (Citizens for Community Involvement), the Board, on July 6, 1976, ordered the matter put to a vote at the November 2, 1976 general election.

The Board adopted a position in opposition to the Jail Initiative on August 31, 1976. Joining the Board as co-signers of the ballot arguments were the Sheriff-Coroner, the County Taxpayers Association, and the chairperson of the citizens group who qualified this matter for the ballot.

Following the receipt of the recommendation from Facility Science Corporation regarding the issues of location and capacity, the Board of Supervisors on September 28, 1976 gave qualified approval to the recommendations of the Public Works Director that the new facility be built in the Martinez Civic Center and have a capacity of 370 to 383 beds.

At the Board meeting of October 19, 1976, William A. Wainwright, new chairperson of the Detention Facility Advisory Committee, appeared to present the recommendation of the committee regarding the Civic Center site for the new jail. The committee recommended that the building be located toward the southwest corner of the superblock bounded by Ward, Willow, Mellus, and Court Streets. This location would require the diversion of Pine Street traffic onto Court Street. The Board concurred in this recommendation on November 9, 1976.

After the polls closed on November 2, 1976, it was determined that the voters of Contra Costa County had turned down the jail initiative by a vote of 98,341 for to 112,910 against.

Preliminary drawings were presented by the architect on December 21, 1976. Following this presentation, the Board authorized the chairman to send a letter to the City of Martinez informing them of the County's desire to close Pine Street for the jail project.

Events of 1977

Three new County Supervisors were sworn in on January 4, 1977; Mrs. Nancy C. Fahden, District 2; Mr. Robert I. Schroder, District 3; and Mr. Eric H. Hasseltine, District 5.

At the January 25, 1977 meeting of the Board, the Public Works Director completed schematic drawings on the new project. Assisting in this presentation were the Preprogramming Firm and the Construction Manager. Mr. William H. Wainwright, Detention Facility Advisory Committee Chairman, also appeared to present the recommendations of the Committee.

Following the staff presentation at the January 25, 1977 meeting, a public hearing on the project was held. At the close of the hearing, the Board set February 1, 1977 as a time for decision on the Detention Facility plans.

Preceded by a short questioning session involving the County Administrator, the Sheriff-Coroner, and Mr. Wainwright, the Board voted unanimously to accept both the consultants Detention Facility Service Program and the Advisory Committee's recommendations, approve the schematic drawings subject to Environmental Impact Report review, and to authorize the designing of the project to proceed.

Chapter 4

DETENTION FACILITY STANDARDS

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Public Works Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	4-1
REFERENCE MATERIALS	4-2
CAPACITY STANDARDS	4-4
RESIDENTIAL AREAS STANDARDS	4-5
MEDICAL SERVICES STANDARDS	4-8
VISITING PROGRAM STANDARDS	4-11
LIBRARY PROGRAM STANDARDS	4-13
COUNSELING PROGRAM STANDARDS	4-14
RECREATION PROGRAM STANDARDS	4-16
EDUCATIONAL PROGRAM STANDARDS	4-17
CONCLUSIONS	4-19

INTRODUCTION

In July, 1973, the State Board of Corrections, State of California, adopted Minimum Jail Standards (MJS) for local detention facilities. Under the MJS, the proposed Contra Costa County Detention Facility (CCCDF) is a Type II facility which is defined as "a local detention facility used for the detention of persons pending arraignment, after arraignment and during trial, and upon a sentence of commitment. Detention in such facilities may be indefinite during trial and up to one year upon commitment." Consequently, the MJS are mandatory standards for the CCCDF as a Type II facility.

Other than the MJS, no clear consensus exists among penologists on standards for correctional facilities and programs. However, the major philosophical trend among penologists suggests that detention facilities should "foster social growth or behavioral improvement" by developing both structural design and inmate programs which establish an environment of normalcy.

In keeping with both this philosophical trend among penologists and the mandatory MJS, the Contra Costa County Board of Supervisors on March 2, 1976, adopted Board Resolution No. 76/201 on the CCCDF specifying, in part, that

Determinations regarding design will be based on our policy to acquire a facility that is able to be adapted to changes in the criminal justice system, on recognized national guidelines, including but not limited to Standard 11.1 of the National Advisory Commission on Criminal Justice Standards & Goals (with the exception of those items which can only be applied to Federal and State correctional institutions), State law and State regulations....

The commitment of the Board of Supervisors requires that the analysis of the CCCDF consider two types of standards: 1) the mandatory MJS which must be viewed as minimum requirements and 2) national guidelines which must be given significant consideration. Therefore, this chapter will develop an analysis of the facility standards for the proposed CCCDF in relationship to the mandatory MJS and the advisory standards of nationally recognized corrections authorities. For clarity, this chapter will present, sequentially, each proposed facility standard for the CCCDF immediately followed by 1) the related mandatory and advisory standards, and 2) a summary of the relationship between the proposed CCCDF standard and the mandatory/advisory standards.

This chapter contains the following sections:

REFERENCE MATERIALS. Lists mandatory and advisory standards materials utilized in the preparation of this chapter.

CAPACITY STANDARDS.

RESIDENTIAL AREAS STANDARDS.

MEDICAL SERVICES STANDARDS.

VISITING PROGRAM STANDARDS.

LIBRARY PROGRAM STANDARDS.

COUNSELING PROGRAM STANDARDS.

RECREATION PROGRAM STANDARDS.

EDUCATIONAL PROGRAM STANDARDS.

CONCLUSIONS. Summarizes the overall relationship between the proposed facility standards for the CCCDF and the Mandatory/Advisory Standards.

This chapter will not deal with Religious Services for inmates since the proposed CCCDF plan calls for coordination of the Religious Services with the local Council of Churches and is dependent upon the numbers of inmates belonging to various denominations at any given time. The proposed CCCDF Religious Services plan also calls for the use of a multi-purpose area as a chapel and for crisis intervention and/or religious counseling to be provided by a day-to-day rotation of chaplains participating through the Council of Churches or through other religious organizations.

REFERENCE MATERIALS.

STATE BOARD OF CORRECTIONS - STATE OF CALIFORNIA. (MJS)

Laws and Guidelines for Local Detention Facilities; January, 1974.

The standards contained in this publication are based on the work of the Minimum Jail Standards Revision Committee. Part II is of particular importance in this analysis because it presents the Minimum Jail Standards (MJS) for Local Detention Facilities in conformance with the Penal Code, Sections 4015, 6029, and 6030.

NATIONAL ADVISORY COMMISSION ON CRIMINAL JUSTICE STANDARDS AND GOALS. (NAC)

Report on Corrections; January, 1973.

The National Advisory Commission (NAC) included representatives from State and Local government, industry, citizens groups, police chiefs, judges, correctional leaders and prosecutors in the preparation of the

standards recommended in the Report. Of particular importance for this analysis was Standard 11.1 of the Report on Corrections.

NATIONAL SHERIFFS' ASSOCIATION. (NSA)

Jail Architecture; 1975.

This handbook is a result of information compiled by a subcommittee of the detention/corrections committee of the association during 1973, 1974. It reflects the parallel interests of the association and the National Clearinghouse for Criminal Justice Planning and Architecture and their agreement on goals for jail architecture.

Jail Programs; 1974.

This document provides information useful in the understanding and implementation of advanced programs for inmates. It identifies program activities that can facilitate inmate contribution to their own reformation and that can also reduce tension in a jail.

Jail Security, Classification and Discipline; 1974.

This handbook provides recommended procedural guidelines for the secure and efficient operation of a jail facility.

Inmates' Legal Rights; 1974.

This document analyzes the impact on jail facilities and operations of recent legislation, administrative rule changes and judicial interpretation concerning the rights of confined persons.

NATIONAL CLEARINGHOUSE FOR CRIMINAL JUSTICE, PLANNING AND ARCHITECTURE. (NCCJ)

Guidelines for the Planning and Design of Regional and Community Correctional Centers for Adults; 1971.

This document was published in 1971 but remains a significant source concerning goals and standards for detention facilities. The document emphasizes community based programs and a comprehensive approach to the issues of correction and detention.

CAPACITY STANDARDS.

CCCDF PROPOSED CAPACITY STANDARDS.

The proposed total capacity for the CCCDF is 383 inmates. This 383 figure represents a peak capacity and is based upon the establishment of a thorough screening and evaluation program intended to insure that the CCCDF is limited to only those persons judged to require incarceration. It is also proposed that the 383 person capacity be achieved by the use of small-scale residential clusters, accommodating 26-51 inmates each. The residential clusters, which will be dealt with more thoroughly in the next section of this chapter, are intended to foster a more normal living environment within the CCCDF by establishing smaller inmate groupings and allowing assignment of staff to the clusters on a full-time basis which will foster better staff-inmate relationships.

MANDATORY AND ADVISORY STANDARDS.

MJS Capacity Standards.

None are given.

NAC Capacity Standards.

Section 9.10 of the NAC's Report on Corrections specifies that "no single component, or institution, should have housing for more than 300 persons." Section 11.1 states that "the size of the inmate population...should be small enough to allow security without excessive regimentation, surveillance equipment, or repressive hardware." Section 11.1 also states that "the number of inmates housed in a single, spatially discrete unit should not exceed 26...."

NSA Capacity Standards.

None are given.

NCCJ Capacity Standards.

The NCCJ recommends a 400 person maximum capacity. The NCCJ reviews funding programs of the Law Enforcement Assistance Administration (LEAA) which also recommends a 400 person maximum capacity.

SUMMARY.

Although the CCCDF proposed 383 person capacity exceeds the NAC's 300 person recommendation, the establishment of small-scale residential clus-

ters seems to accommodate the intent of Standard 11.1 for a small inmate population allowing minimal regimentation and repressive hardware but exceeds the maximum of 26 inmates in the housing clusters. The 383 person capacity is also well within the 400 person maximum recommendations of the NCCJ and LEAA; the NCCJ has also accepted the larger cluster size of the CCCDF.

RESIDENTIAL AREAS STANDARDS.

CCCDF PROPOSED RESIDENTIAL AREAS STANDARDS.

The proposed CCCDF plan calls for the inmate classification procedures to begin at the time of intake. For this purpose, the CCCDF recommends an intake housing area adjacent to the booking area, where persons can be held for up to several days separate from the general population. This separate housing will allow additional time for decisions on individuals whom staff find it difficult to classify.

The classification system for the CCCDF is intended to separate, in the general population housing, the following groups: 1) males from females; 2) persons in pre-sentenced status; 3) convicted persons by sentence; and, 4) persons held for contempt or civil process. The CCCDF classification system is intended to also separate inmates on the basis of 1) severity of offense; 2) level of criminal sophistication; and, 3) degree of danger they may pose predicated on their behavior.

The CCCDF plan recommends that each inmate have an individual room which is to be 70 square feet in size. Each room is to have its own toilet and lavatory and a window of, at present, unspecified dimensions.

It is proposed that the single occupant rooms be located in clusters based upon the classification system criteria. The number of rooms in each cluster ranges from 26 rooms in the medical area to 51 rooms for the female inmates. The CCCDF will have a total of 9 clusters; five clusters will contain 48 rooms; one cluster, 26 rooms; one cluster, 51 rooms; one cluster, 36 rooms; and one cluster, 30 rooms. The CCCDF also calls for physically separated modules, within the clusters, based upon the various classification categories such as sentenced or unsentenced inmates. Each grouping of rooms will be arranged around a central dining/day room space.

The CCCDF recommends that showers be available within each cluster on a ratio of 1 per 8 inmates.

MANDATORY AND ADVISORY STANDARDS.

MJS Residential Areas Standards.

Under the MJS, separation of the following groups is required: 1) male

from female; 2) pre-trial from post-trial detainees; and, 3) witnesses (or civil process or contempt detainees) from other groups.

The MJS requires that "single occupancy cells shall have a minimum width of 6 feet, depth of 8 feet, and height of 8 feet." This represents 48 square feet. A water closet and wash basin are required for inmates on a 1 to 8 ratio.

The MJS further requires that showers be provided at locations allowing inmates to bathe at least every other day and that "there be no fewer than one shower for every 16 inmates."

NAC Residential Areas Standards.

The NAC recommends a classification system for residential assignment which states, in part:

Prisoners suffering from disabilities should have separate housing, and serious and multiple offenders should be kept separate from those whose conviction was for a first or minor offense. Pre-trial and post-trial detainees should also be housed separately.

The NAC states that dormitories should not be used and recommends single rooms with a "floor space of 80 square feet" and an "outside window of 10 square feet or more."

NSA Residential Areas Standards.

The NSA states that residential areas should provide for classification of inmates into separate living units and separate 1) pre-trial from post-trial detainees; 2) maximum, medium and minimum security detainees; 3) work release inmates; 4) females from males; 5) juveniles from adults; and 6) medically or mentally ill from all others. Such assignments should be based on a thorough diagnosis and assessment process.

The NSA states that inmates detained more than 4 to 8 hours, excepting work release inmates, must have individual rooms. The individual rooms should average 70 to 80 square feet and have exterior visual access.

An all-purpose activity area is recommended by the NSA for each detention room cluster.

The NSA recommends that each housing area have centralized toilet components provided, including water closets, urinals, lavatories and shower/drying/dress areas.

NCCJ Residential Areas Standards.

The NCCJ recommends individual rooms containing a window. The room should be dimensioned to permit inmate re-arrangement of furniture and "large enough to permit two people to converse sitting in chairs."

The NCCJ recommends that "a maximum of 12 rooms relate to a lounge area." It is recommended that showers be centralized with normal fixtures; bathrooms accommodating 12-16 inmates are recommended to be in the lounge area.

SUMMARY.

The major factors for the residential areas are those relating to the standards for classification of inmates; the provision of single rooms, including the size of one room and of the window area; and, the use and size of room clusters. The proposed CCCDF surpasses the MJS on each factor.

The CCCDF proposes a thorough classification system and allows for temporary housing of inmates until the classification of inmates for general population housing is completed. This is in keeping with the recommendations of the NAC, the NSA and the NCCJ standards.

The CCCDF proposal of 70 square feet for single occupancy rooms is less than the NAC recommendation of 80 square feet. As yet, the window size for the CCCDF is undetermined. However, the NCCJ has indicated in a letter that the room size is acceptable. The provision of single occupancy rooms meets the standards of the NAC, the NSA, and the NCCJ.

The proposed CCCDF room cluster arrangements (with 5 clusters of 48 rooms and 2 clusters with less than 40 rooms) exceeds the recommended standards of the NAC and the NCCJ. The NAC recommends 26 rooms per cluster and the NCCJ recommends 30 to 40 persons per cluster. However, as pointed out, the clusters in the CCCDF contain physically separated modules which can provide the feeling of a smaller environmental setting. The cluster size (using 48 rooms as the standard) was selected on the basis of the success of this size in the Metropolitan Pre-trial Correction Centers in San Diego, Chicago and New York for achieving economy and effective staff-inmate interaction. And, as pointed out, the NCCJ has accepted the CCCDF proposed cluster size.

The CCCDF dining/day room space exceeds the NCCJ recommendation that this area relate to a maximum of 12 rooms. However, the CCCDF plan allows for partitioning of the area which will allow smaller group arrangements. The CCCDF recommendations for toilet and lavatory in each room exceeds all mandatory and advisory standards. The provision of showers on a 1 to 8 ratio also exceeds the mandatory and advisory standards.

MEDICAL SERVICES STANDARDS.

CCCDF PROPOSED MEDICAL SERVICES STANDARDS.

The CCCDF proposes the provision of two types of medical services:

- 1) general health maintenance, including dental work and eye care and
- 2) mental health care especially in the areas of alcohol and drug cases.

The CCCDF medical services will consist of the following:

- . determination by the booking officer of apparent need for immediate medical attention in the case of every person that is brought in
- . availability of medical service around-the-clock 7 days a week
- . screening and taking of a medical history of all persons held for over 72 hours
- . daily sick call
- . emergency services as required
- . referral to specialty clinics at the hospital as required
- . special diets or medication as determined from sources previously giving service or resulting from new examination or diagnosis
- . surgery as required at the hospital
- . intensive intermediate and general medical care as required at the hospital

It is proposed that the CCCDF medical services also include the following special care services:

- . an alcohol recovery unit for drunk drivers and gross intoxication cases with referral to a detoxification program
- . regular availability at the facility of dental services emphasizing remedial work and preventive care
- . regular eye clinics at the facility
- . supervised care at the facility of post-stabilized drug detoxification cases
- . individual diagnosis and individual and group therapy sessions on the premises by mental health specialists

In order to accommodate these services, the CCCDF proposes the use of four physical settings:

- . a basic medical examination and treatment clinic including patient bedrooms for overnight observation
- . a dental operatory
- . an alcohol recovery area adjacent to the booking desk
- . a residential cluster suitable for use as a convalescent care ward for medical and surgical cases and for drug detoxification cases

It is further proposed that mental therapy work in the CCCDF take place in three locations:

- . the contact visiting rooms in the residential clusters
- . the consultation and examination rooms in the medical suite
- . offices, classrooms and library complex areas

MANDATORY AND ADVISORY STANDARDS.

MJS Medical Services Standards.

Under the MJS "a physician shall be available at all times" in facilities detaining a daily average of more than 100 persons. Sick calls must be conducted daily for all inmates by an RN, LVN or medical assistant.

The MJS requires that complete health records be kept including the following information: 1) complaints of illness or injury; 2) names of persons who treat, prescribe or issue medication; and, 3) location where treated.

The MJS requires the development and implementation, with local health authorities, of a suitable plan for identification, treatment, and control of inmates with communicable diseases.

The MJS also requires that Type II facilities of 100 or more average daily population be equipped with an infirmary.

NAC Medical Services Standards.

The NAC recommends that formal sick call procedures be established and that each inmate be examined by a physician within 24 hours after admission to determine physical and mental status.

The NAC also recommends that services be provided by a qualified dentist and that eye glass fitting and other special services be available.

Medical records are recommended to include:

- . condition at admission
- . previous medical history
- . illness or injury during confinement
- . treatments provided
- . condition at time of release

NSA Medical Services Standards.

The NSA recommends that a doctor always be available, that every new inmate be examined, that there be daily sick calls, and that medical records be maintained on all inmates.

The NSA recommends that there be an infirmary for inmates receiving medical treatment within the jail. But the NSA further recommends that maximum use be made of community health facilities.

A mental health staff is recommended for examination and diagnosis of all inmates and for treatment of all but the psychotic.

NCCJ Medical Services Standards.

The NCCJ recommends an initial medical examination upon entry into the facility. Newly admitted clients should be housed separately from the resident population until examined. Examination should include general physical, medical and dental history, chest x-ray, urine and complete blood count analysis. Mental health services should be available to clients upon request. Initial intake interviews should be designed to expose mental health problems so treatment can be offered.

Sick call services and emergency treatment are recommended by the NCCJ to take place on a daily basis. Clinical treatment for all diagnosed illnesses should be provided and arrangements for surgery or medical specialists should be made as needed. Infirmary services to include bed care, nursing services and diatetics.

It is recommended that complete dental services be provided including emergency treatment, maintenance, fillings, oral surgery, etc.

SUMMARY.

The CCCDF medical services plan meets the MJS.

The proposed plan calls for coordination with and referral to local medical institutions, programs for surgery, mental health treatment, and a detoxification program both during confinement and after release.

The CCCDF meets most of the advisory standards of the NAC, the NSA, and the NCCJ. The proximity of the County Hospital, and the wide range of medical/mental care services it provides, will facilitate the CCCDF medical services plan.

VISITING PROGRAM STANDARDS.

CCCDF PROPOSED VISITING PROGRAM STANDARDS.

The CCCDF plan proposes two types of visiting arrangements:

- . a non-contact type area which will consist of a floor-to-ceiling divider with no physical contact but with visual contact
- . an area for open contact in a lounge or open area

The CCCDF plan also proposes decentralized visiting arrangements be located in the residential clusters to permit operation by staff normally assigned to the clusters. This visiting will consist of three open contact rooms and three secure booths. The secure booths will have a moveable divider which can be removed to allow limited contact. One of the open contact rooms in each cluster will be available for counseling. Additional visitation is provided for in the intake unit and the court assembly area.

The visiting program will accommodate all official visits and a minimum of two one-hour visits from other visitors per week, per inmate. Visiting hours are recommended to occur daily during the evening hours to accommodate families and on a scheduled basis during the day. Actual visitation patterns and hours will be dependent upon facility staffing during operation.

MANDATORY AND ADVISORY STANDARDS.

MJS Visiting Program Standards.

The MJS requires that new facilities include "sufficient visiting space for a minimum of two visits per week totalling at least one hour without any differentiation made between pre-trial detainees and sentenced inmates." It is recommended that the visiting hours' rules, regulations and restrictions must be visibly posted in the visiting area in both Spanish and English.

NAC Visiting Program Standards.

The NAC recommends the following guidelines for visiting:

- . at least 14 regular visiting hours weekly with at least five between 7:00 p.m. and 10:00 p.m.
- . the environment should be as normal as possible; maximum security arrangements should be reserved if necessary
- . weekend visits and home furlough should be planned regularly

NSA Visiting Program Standards.

The NSA recommends only that a system for conducting visits to prisoners be prescribed.

NCCJ Visiting Program Standards.

The NCCJ visiting program standards are predicated on the view that few inmates in local detention facilities demand close custody. As a result, low numbers of high security provision are recommended to physically separate visitors.

The NCCJ recommends the use of private rooms for confidential visits (i.e., attorneys) with supervision through glass windows. Glass partitions and the use of earphones is recommended as preferable to screen barriers.

The majority of visiting arrangements are recommended by the NCCJ to be an informal lounge, indoor or outdoor areas in which a supervisor circulates freely but allows residents and visitors to converse without constraints. It is also recommended that entirely unsupervised visiting occur during final phases of the residents' treatment programs.

The NCCJ recommends that the visiting program not be part of a reward/punishment system. Few limitations, both the frequency and duration of visits, and the numbers of visitors are recommended.

SUMMARY.

The CCCDF visiting program plan meets the MJS and NSA standards. The CCCDF visiting hours (in the evening on a daily basis and regularly scheduled hours in the daytime) goes beyond the NAC recommendations of 14 hours per week but is in keeping with the NCCJ recommendations for few limitations. The CCCDF proposal for three contact-type arrangements, located in the residential areas, is somewhat more restrictive than the

informal arrangements recommended by the NCCJ. However, the three contact-type rooms allow for privacy and flexibility in visiting situations to accommodate the security required for various inmates.

LIBRARY PROGRAM STANDARDS.

CCCDF PROPOSED LIBRARY PROGRAM STANDARDS.

The CCCDF plan calls for the establishment of a complete library on the detention facility premises itself. Due to cost, the plan recommends that the library be established in two phases.

Phase I of the CCCDF plan proposes the following:

- . a legal collection such as that recommended by the Alameda County Law Library be purchased
- . a general collection of 1,000 volumes consisting of paperbacks and basic reference work be purchased
- . basic audio-visual equipment and material consisting of approximately 5 phonographs, 18 tape players, 1 tape recorder, 2 movie projectors, 1 portable screen, records and tapes be purchased
- . the library be staffed by volunteers, inmates and jail personnel

Phase II of the CCCDF plan proposes the following:

- . the legal collection be increased until the basic collection recommended by the American Association of Law Libraries (AALL) is attained
- . the general collection be increased by 2,000 volumes within two years beginning with hardbacks and better quality materials
- . at the time the library reaches 3,000 volumes and the AALL basic collection is completed, there should be at least a part-time general librarian. When the full collection of 6,000 volumes and the full legal collection are purchased, a full-time librarian should be utilized.

The CCCDF plan calls for the library facility to be both centralized and decentralized components. The central library will be for infrequently used volumes and legal materials with a small space provided for extra or out-of-order audio-visual equipment.

Recreational reading material and basic frequently used reference volumes will be provided in each living area with a librarian, or other person in charge, bringing the reading materials to the clusters. The audio-visual equipment will also be located in the living areas.

MANDATORY AND ADVISORY STANDARDS.

MJS Library Program Standards.

Under the MJS, a Type II facility must provide access to legal reference materials and contain current information on community services. This can be done, under the MJS, by establishing a loan service with the County Law Library.

The MJS also requires that arrangements be made for County library services or that a branch be established at the jail.

NAC Library Program Standards.

The NAC recommends access to library materials, television, writing materials, playing cards and games.

NSA Library Program Standards.

None are given.

NCCJ Library Program Standards.

The NCCJ states that "a well-planned and well-stocked library is vital in inmate education and recreation programs." Use of bookmobile or public facilities is recommended.

SUMMARY.

The CCCDF plan clearly goes beyond the MJS and the advisory standards in recommending the establishment of a library within the detention center. But it should be noted that the provision of legal reference materials is not only required by the MJS but also by legal precedent.

The CCCDF recommendation of an extensive library is basically intended so that the non-legal materials will be used as part of the recreational and educational programs for inmates. This is clearly the intent of the NAC and the NCCJ recommendations.

COUNSELING PROGRAM STANDARDS.

CCCDF PROPOSED COUNSELING PROGRAM STANDARDS.

The CCCDF Counseling Program emphasizes counseling in the area of crisis intervention due to the shorter length of incarceration. The CCCDF Counseling Program recommends:

- . the use of available spaces such as the inmate's room, an empty office, a common area, intake interview spaces, family visiting rooms, or other areas not in use
- . two additional rooms located between the library and chapel/classroom as places for counseling as well as confession, receiving of sacraments, tutorial activities and meetings
- . active solicitation of services from community agencies and groups
- . a staff person to manage the function and see that there is 24-hour coverage (preferably by volunteers) at the intake work station. (This is not necessarily the only duty of this staff person.)

MANDATORY AND ADVISORY STANDARDS.

MJS Counseling Program Standards.

None are given.

NAC Counseling Program Standards.

The NAC recommends that counseling be done by correctional officers who are supervised by professionals. The NAC also recommends that individuals with acute problems be provided professional care.

NSA Counseling Program Standards.

The NSA recommends that all jails provide for the diagnosis and treatment of the mentally ill as well as for regular counseling of prisoners relative to personal and group problems. The NSA suggests that counseling be supervised by a professional competent staff individual and involve individual and group programs for the sentenced as well as unsentenced prisoner.

NCCJ Counseling Program Standards.

The NCCJ recommends that counseling spaces have a residential character by utilizing smaller scale spaces. Counselors should be easily accessible from social service areas and living areas or scattered throughout these areas. The NCCJ also recommends that individual counseling areas be placed off of communal spaces and living areas.

SUMMARY.

Inasmuch as the proposed detention facility will largely be one of rapid turnover, the types of useful services which may be provided are limited. However, the CCCDF plan does provide for crisis intervention and counseling for alcohol and drug cases. Crisis intervention, in keeping with the NAC, NSA and NCCJ recommendations, will be available initially to all inmates. Alcohol and drug abuse counseling is more clearly outlined in the section on Medical Services Standards.

RECREATION PROGRAM STANDARDS.

CCCDF PROPOSED RECREATION STANDARDS.

The CCCDF plan proposes that the recreation program consist of the following components:

- . sedentary activities (such as table games, television, etc.) to occur in the day space area within each residential cluster
- . semi-active recreation (such as billiards, table tennis, etc.) to be accommodated within the multi-purpose/dining area. Activities should be supervised by the unit manager; no additional staff should be required. Both the day space and multi-purpose space can be combined as a single larger area but an effort should be made to define separate areas through architectural and interior design features.
- . an area of approximately 300 square feet should be created for arts and crafts activities as part of the educational program space. This area should accommodate about 10 participants with folding tables as well as two 36" x 18" cabinets for supplies and storage.
- . primary emphasis should be placed on using the outdoor areas adjacent to the residential clusters with direct access from the day spaces. Use of the outdoor areas should be governed by the same administrative controls affecting the day spaces. No space should be smaller than 800 square feet and should be sized at 25 to 50 square feet per user depending upon design feasibility and cost. Outdoor areas should be easily maintainable and contain tables and chairs for reading, games and dining. These outside areas will also accommodate active recreation such as basketball, handball or volleyball.

MANDATORY AND ADVISORY STANDARDS.

MJS Recreation Program Standards.

The MJS requires that recreation be provided for a minimum of three hours over a seven-day period.

The MJS requires that a Type II facility have an exercise area, preferably outside. The number of square feet of surface area should be as follows: 30 feet x 50 feet = 1500 square feet minimum.

NAC Recreation Program Standards.

The NAC recommends that physical exercise be available through both the facility and local recreation sources.

NSA Recreation Program Standards.

The NSA states that well-supervised and planned activities are necessary to eliminate the dull monotony of jail life, to prevent disciplinary problems, and to teach prisoners the constructive use of leisure time.

NCCJ Recreation Program Standards.

The NCCJ recommends that a multi-purpose space accommodate athletic activity, cultural activities and group meetings. Passive recreation spaces for TV, radio, record player and so on, are recommended to be separated from the multi-purpose area. Recreation activities in the living unit should include such things as radio and headphones. Lounging and living space are recommended for informal visiting and small group discussions. Arts and crafts should be separated to avoid length of preparation and cleanup.

SUMMARY.

The five components of the CCCDF recreation plan provide a variety of relaxed, semi-active and active recreation opportunities for residents. The CCCDF recommended locations and physical separations for recreation activities are in keeping with the NCCJ guidelines which are the most thorough of the advisory standards.

The only area in which the CCCDF does not meet standards is in required space for the exercise area. The MJS mandate that 1500 square feet be allocated for the outdoor exercise area. Discussions with representatives of the State Board of Corrections, however, have been held and the representatives have indicated that the CCCDF plan may be acceptable. The acceptance is based on the total program advantages to be achieved through the use of the decentralized outside exercise areas located near each residential cluster.

EDUCATIONAL PROGRAM STANDARDS.

CCCDF PROPOSED EDUCATIONAL PROGRAM STANDARDS.

The CCCDF recommends two areas of focus for the Educational Program: 1) counseling services, and 2) institutional instruction.

Information will be collected on each inmate, as part of the intake screening process, to determine educational attainment, skills and employment. Inmates will have available to them the following services:

- . testing of academic skills and types of interests and abilities
- . advice and counseling on a course of action
- . information on instructional opportunities in the detention facility
- . information on adult education courses in the community of residence
- . assistance in contacting and engaging desired services
- . assistance in obtaining community-based educational counseling services

The institutional instruction proposed for the CCCDF is recommended to consist of the following:

- . course work which can be applicable towards a high school (G.E.D.) diploma
- . vocational courses to be demonstration-type classes, given by community volunteers, designed to provide information to inmates and allow them to perform the tasks of the particular vocation being demonstrated
- . informal courses on such subjects as family and marital problems, drug addiction, alcoholism, health, interpersonal relations, community relations, and current events

In order to provide these educational services, the CCCDF proposes a classroom within the library/chapel complex. Small group sessions should be accommodated by the use of the multi-purpose areas and contact visitation rooms.

MANDATORY AND ADVISORY STANDARDS.

MJS Educational Program Standards.

The MJS recommends that a program manager plan voluntary and/or vocational education for both sentenced and unsentenced inmates. The MJS recommends that eligibility criteria for inmates to participate in the educational program should be established.

NAC Educational Program Standards.

The NAC recommends that educational programs be available to all inmates and that the program emphasize: 1) self-paced learning; 2) packaged

institutional materials; and, 3) utilization of volunteers and para-professionals as instructors. The NAC recommends also that job placement be operated in conjunction with vocational training.

NSA Educational Program Standards.

The NSA recommends an intensive and effective program of basic adult vocational, academic and social education.

NCCJ Educational Program Standards.

None are given.

SUMMARY.

In planning for educational counseling and three types of educational instruction (academic, vocational, socially-oriented), the CCCDF complies with the mandatory and advisory standards.

CONCLUSIONS.

As noted, the CCCDF facility standards are mandated to be in compliance with the MJS. In all but one case, the CCCDF meets or surpasses the MJS. The one exception is the 1500 square feet required for the outside exercise area; but as noted, the State Board of Corrections has indicated that the use of the decentralized outside areas near each residential cluster may be acceptable.

The CCCDF plan also meets most advisory standards. The primary exceptions are: 1) the NAC capacity standard of 300 persons, and 2) the NAC room size standard of 80 square feet. In each instance, the NCCJ representatives have indicated their acceptance of the CCCDF proposals due to the total facility program.

In a letter received from the NCCJ Project Review Administrator, who had reviewed the CCCDF plans, the overall CCCDF facility standards were acknowledged to be in keeping with recognized national guidelines:

The overall impression from this review was that the schematic proposals were certainly well within advanced techniques and practices as defined by contemporary standards for detention facility design.

Consequently, the Board of Supervisors' mandate that the CCCDF meet both the MJS and recognized national guidelines seems, generally, to have been achieved.

Chapter 5

INMATE CAPACITY

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Planning Department
January, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	5-1
THE CAPACITY DECISION PROCESS	5-2
Historical Background	5-2
Introduction to Capacity Projection	5-2
The Detention Facility Advisory Committee Study	5-4
Facility Sciences Corporation Study	5-7
Analysis and Reconciliation of the DFAC and FSC Capacity Studies	5-12
The Capacity Decision of the Board of Supervisors	5-14
IMPACTS	5-15
Impacts of the Capacity Decision	5-15
Mitigating Measures	5-16
ILLUSTRATIONS AND TABLES	
FIGURES	
Figure 1: Summary of Capacity Recommendations	5-13
TABLES	
Table 1: Contra Costa County Detention Facility Population, April 15, 1976	5-5
Table 2: Incarceration Rates, Contra Costa County Detention Facility Population, April 15, 1976	5-6
Table 3: Projections of Contra Costa County's Detention Facility Population: 1980-2020	5-8
Table 4: Facility Sciences Corporation, Summary of Inmate Capacity Forecasts, Contra Costa County Detention Facility	5-10
Table 5: Facility Sciences Corporation: Contra Costa County Detention Facility Population Forecast by Category	5-11

INTRODUCTION

One of the most difficult and important elements of detention facility planning is determining the number of persons which a facility should be designed to house. Future inmate population levels are very hard to project, because they are influenced by a myriad of complex and frequently indeterminate socioeconomic, legal, and attitudinal factors. For example, future laws, treatment methods, and crime trends will have a significant impact on future capacity; but these cannot be forecasted with accuracy. Capacity planning is important because it can eliminate problems which might arise from construction of a facility of improper capacity. The construction of a facility which is either too large or too small is likely to adversely affect its management, the conduct of programs, and living and working conditions, with consequent hardships for facility staff and inmates. Building either an excessively small or large facility would also result in an uneconomic capital expenditure of public funds.

Contra Costa County is currently involved in a program to construct a new pre-trial detention facility. The County's Board of Supervisors has selected a design capacity of 370 - 383 to serve as a guide in planning the new facility.¹ The purpose of this report is to provide a description and analysis of the processes involved in the formulation of the design capacity, and to identify the impacts of the county's capacity decision. The report includes a discussion, evaluation and reconciliation of the two capacity studies prepared specifically for the presently proposed facility: the Detention Facility Advisory Committee (DFAC) study and the Facility Sciences Corporation (FSC) study. In addition, there is an historical review of county policy regarding capacity, and a general explanation of capacity projection techniques. The capacity decision of the Board of Supervisors is presented and reviewed in light of historical policy and the two capacity studies. Finally, there is a discussion of the impacts of the County's capacity decision, and a presentation of measures which might be instituted to mitigate resulting negative impacts.

¹ Actual design as of January 25, 1977 uses a capacity of 383 beds.

THE CAPACITY DECISION PROCESS

Historical Background

Planning efforts aimed at replacement of the present county detention facility were initiated in the early 1960's. The question of capacity has been an important element in the various detention facility plans and proposals which have been developed, discussed, and considered since then. In 1969, the Jail Study Committee of 100, which had been formed by the Board of Supervisors, recommended constructing a new facility with a maximum capacity of 500 persons. In March of 1973, the County Administrator recommended reducing capacity to 400 inmates. The decision to construct a smaller facility was based in part upon the recommendations of the Bay Area Social Planning Council.² In April of 1973, the Board of Supervisors voted to construct a facility with a capacity of 308-350 inmates. Following this policy decision, plans for a facility which would house 343 persons were developed; however, these plans have since been abandoned (1975).

Planning activities for the detention facility which is proposed under the present program have generated two separate investigations of capacity. The initial capacity study, made by the Internal Capacity Subcommittee of the Detention Facility Advisory Committee (DFAC), which was formed by the Board of Supervisors, recommended building a facility to house 338 persons. The other study was subsequently conducted by Facility Sciences Corporation (FSC), the project's programming consultant. It recommended that the County construct a facility to house 383 inmates, as a first step in meeting its future detention needs. Based upon these recommendations as well as other considerations, the County Board of Supervisors, on September 28, 1976, gave instructions to proceed with a design for a facility with a capacity of 370 to 383 inmates.

Introduction to Capacity Projection

An important aspect of the facility planning is the projection of future space and occupancy requirements of the facility. In detention facility planning, future inmate population levels are the primary determinant of such requirements. Consequently, being able to accurately project future inmate population levels is quite important; along with legal requirements, state and federal standards, and local needs and policy determinations, capacity projection is an integral part of the total facility planning process.

²In its report concerning Alternatives to Incarceration and Proposed Improvements in the Jail System in Contra Costa County, the Bay Area Social Planning Council recommended that the County construct two new detention facilities with combined capacities not to exceed 445 beds.

Projections of future inmate population levels are generally based upon trends of past years. Probably the most common practice employed in making projections is to utilize historic inmate population data to develop a mathematical formula relating inmate population to time, total population (in this instance total county population), or both. Frequently, projection techniques focus upon specific components of the total population because the detention facility population tends to be drawn primarily from certain groups. Once a mathematical formula is developed, it can then be utilized to project the inmate population at future times.

Frequently, the major problem involved in developing such a capacity projection technique is finding adequate historical data upon which to base projections. Because of the frequent lack of particular kinds of data, it is often not possible to utilize a previously selected methodology. Rather, it is often necessary to utilize a methodology which best fits the data which is available. This approach was taken by the capacity studies prepared for the proposed project. It is important to note that satisfactory projections can be developed from more than one technique. Although a specific technique may be preferable, there are usually alternative approaches which will provide satisfactory projections.

Once an appropriate methodology is selected, a basic future projection which is based simply upon historic data can be made. It is frequently necessary to then modify such a basic projection to reflect the influences which various social, economic, legal, and attitudinal factors are likely to have upon future inmate population levels. The initial DFAC study examined a variety of such factors, and attempted to assess the impact of each upon future capacities. FSC evaluated the same factors and quantified the anticipated effects of certain of the factors upon inmate population levels. The following is a listing of the factors which DFAC found to be the most critical:

1. Increasing Population
2. Speeding up the Court Process
3. Closing City Jails
4. Increasing Public Demand for Preventative Detention
5. Decriminalization of Victimless Crimes
6. Increased Use of Police Citations
7. Provision of Courtrooms within the Detention Facility
8. Increased Arrests
9. Increased Use of Adult Facility for Juveniles
10. Maximum Flexibility and Design
11. Increased Gap in Socio-Economic Status

Adjusting the basic projections to account for the anticipated effects of such factors generally provides satisfactory future inmate population projections. However, it may occasionally be desirable to further refine the projections, to take into account additional predictive information which is available or provide specialized projections.

The Detention Facility Advisory Committee Study

Shortly after its creation in March, 1976, the Detention Facility Advisory Committee (DFAC) organized an Internal Capacity Subcommittee to study the problem of capacity and formulate a design capacity recommendation for the facility. As noted, the Subcommittee's study was the initial capacity investigation made for the facility which is proposed under the present program. Additional supportive capacity studies were later made by the project's programming consultant.

The Subcommittee began its capacity investigations by examining available current and historic data. In reviewing historic data, the Subcommittee discovered that the bulk of the county's inmate population is drawn from specific segments within the county's population. A census of county detention facility inmates taken on April 15, 1976 (see Table 1) revealed that 73% of the inmates were aged 18-29, and 67% were males aged 18-29. The age-sex pattern of the inmates suggested that future inmate population levels would be more dependent upon the growth of the segments of the population from which most prisoners are drawn, than upon the growth of the total county population. Examination of countywide population projections indicated that the growth of the county's high crime age groups will differ significantly from the growth of the total county population. For example, projections indicate that the number of county residents in the 15-29 year age group will grow rapidly until 1980, remain stable until 1985, decline through the early 1990's, and then begin to grow rapidly again. At the same time that the growth rate of this population group is fluctuating, the growth rate of the total county population is expected to remain stable at about 1-1½% per year. This further suggested a need to independently examine the projected growth of high crime population age groups when projecting future capacity needs.

In order to adequately consider the effect of the changing age-sex structure of the county's population, the Subcommittee developed a capacity projection technique which incorporated: (1) projections of the county's population to the year 2000, and (2) projected rates of incarceration³ (See Table 2 for an example of incarceration rates) by 5 year age groups for each sex to the year 2000. Multiplying projected incarceration rates by the projected population at a future time yields future inmate population levels. These levels were adjusted to account for peak capacity and vacancy needs, and for factors likely to influence inmate population levels.

³ An incarceration rate is defined as the ratio of the number of inmates in a given population group to the total number of persons (in this case county residents) in the group.

Table 1

CONTRA COSTA COUNTY DETENTION FACILITY POPULATION¹
APRIL 15, 1976

AGE	Total	TOTAL		Total	WHITE		Total	BLACK	
		Male	Female		Male	Female		Male	Female
Total All Ages	222	204	18	120	113	7	102	91	11
Under 10	0	0	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0	0	0
15-19	27	26	1	18	18	0	9	8	1
20-24	76	69	7	43	40	3	33	29	4
25-29	60	54	6	34	32	2	26	22	4
30-34	29	26	3	11	10	1	18	16	2
35-39	20	19	1	6	5	1	14	14	0
40-44	4	4	0	4	4	0	0	0	0
45-49	4	4	0	3	3	0	1	1	0
50-54	1	1	0	0	0	0	1	1	0
55-59	1	1	0	1	1	0	0	0	0
60-64	0	0	0	0	0	0	0	0	0
65-74	0	0	0	0	0	0	0	0	0
75 and Over	0	0	0	0	0	0	0	0	0

¹Includes inmates of Main Jail, Branch Jail, Hospital, Santa Rita, and San Bruno.

Source: Contra Costa County Sheriff-Coroner's Office Survey.

Table 2

INCARCERATION RATES¹, CONTRA COSTA COUNTY
DETENTION FACILITY POPULATION²: APRIL 15, 1976

(Rates per Million Population)

<u>Age</u>	<u>Total</u>	<u>Male</u>	<u>Female</u>
Total, all ages	381	707	61.1
Under 10	0	0	0
10-14	0	0	0
15-19	480	897	36.6
20-24	1,810	3,294	333.0
25-29	1,286	2,408	247.0
30-34	637	1,179	128.0
35-39	518	995	51.3
40-44	110	223	0
45-49	112	225	0
50-54	26.3	53.5	0
55-59	34.3	67.6	0
60-64	0	0	0
65-74	0	0	0
75 and over	0	0	0

¹ Number of detention facility inmates per million persons in total county population.

² Includes inmates of Main Jail, Branch Jail, Hospital, Santa Rita, and San Bruno. Population data used was from 1975 County Special Census.

Source: Contra Costa County Sheriff-Coroner's Office, Contra Costa County Planning Department.

The Capacity Subcommittee evaluated the potential effect of various social, economic, and attitudinal factors likely to influence inmate population levels, and determined that their influence would not significantly alter the basic inmate population projections. The Subcommittee also tested various hypotheses concerning future incarceration levels, and developed a final set of three capacity projections.⁴ The Subcommittee's low projection was based on a continuation of the present (1976) level of incarceration and its high projection was based on the rates of change experienced in the 1960-1970 period projected to the year 2000. The middle projection, the one selected by the Subcommittee for its recommendation, utilized an incarceration rate projection based on statewide incarceration trends by age and sex for the period 1940-1970. County rates were then projected to the year 2000 based upon the 1940-1970 statewide trends. A summary of the DFAC projections is presented in Table 3.

The Subcommittee's middle projection resulted in an inmate population of 360 by the year 2000. However, the Subcommittee recommended constructing a facility with permanent bed space for 338 inmates; the remaining 22 inmates were expected to be detained in holding cells within the facility and the County Hospital.

Facility Sciences Corporation Study

Facility Sciences Corporation (FSC) was hired by the county in mid-1976 to perform certain programming functions during the detention facility planning phase. One of FSC's first responsibilities was to review the capacity planning efforts of DFAC and provide supplemental information and supportive studies regarding facility capacity. One result of FSC's efforts was the development of a separate capacity study which complemented DFAC's efforts.⁵ In its capacity study, FSC utilized a projection methodology which examined separately the various categories of inmates that comprised the total jail population. Special emphasis was placed upon unsentenced inmates, the largest group. The number of unsentenced inmates was projected to the year 2000. The numerical growth of the other inmate groups was similarly projected, based partly upon the growth of the unsentenced group.

⁴Detention Facility Advisory Committee Internal Capacity Subcommittee, Report of the Detention Facility Advisory Committee Internal Capacity Subcommittee, May 18, 1976.

⁵Facility Sciences Corporation, "Bed Capacity Forecasts, Contra Costa County Detention Facility," September 8, 1976.

Table 3

PROJECTIONS¹ OF CONTRA COSTA COUNTY'S
DETENTION FACILITY POPULATION: 1980-2020

Year	(A) Based on constant Contra Costa County April 1976 Incarceration Rates			(B) Based upon California 1940 - 1970 Incarceration Rate Trends			(C) Based on California 1960 - 1970 Incarceration Rate Trends		
	Average Daily Population	With 50% of Peaks ²	With 50% of Peaks and Vacancy ³	Average Daily Population	With 50% of Peaks ²	With 50% of Peaks and Vacancy ³	Average Daily Population	With 50% of Peaks ²	With 50% of Peaks and Vacancy ³
1976 ⁴	222	258	269	222	258	269	222	256	269
1980	251	292	305	258	300	313	274	318	334
1990	261	303	313	281	327	341	341	396	416
2000	264	307	320	297	345	360*	450	523	549
2010	309	359	374	360	418	436	--	--	--
2020	322	374	390	368	428	446	--	--	--

*The figure selected by the Detention Facility Advisory Subcommittee on Capacity as its capacity recommendation. Each projection based upon projected growth of age/sex cohorts using medium growth, medium level population projections.

²Accounts for 50% of monthly peaks.

³Accounts for 50% of monthly peaks and Vacancy factor (5% of average daily population).

⁴From April 15, 1976 Contra Costa County Jail Census.

Source: U. S. Bureau of the Census, Contra Costa County Sheriff-Coroner's Office, Contra Costa County Planning Department.

Prepared by: Contra Costa County Planning Department (5/7/76)

FSC's projection of unsentenced inmates was based upon historic booking rate data, namely upon the number of bookings of unsentenced persons as a proportion of the total county population for the years 1969 through 1975. From this data a "straight line" projection (one which assumes a constant rate of change through time) of unsentenced bookings was made to the year 2000 utilizing standard statistical procedures⁶. This projection was then adjusted to account for various social, legal, and operational factors expected to influence detention facility capacity. Cited for example were changes in the arrest rates for certain crimes, decriminalization of victimless crimes, and citation in lieu of arrest.

According to FSC's analysis, the effects of the various adjustments tended to cancel one another, thus yielding a result quite close to the original straight-line projection. This cancellation of the effects of the various adjustment factors is similar to the conclusion reached by the DFAC study. The impact of the adjustment factors was incorporated into the projections of unsentenced inmates to derive total capacity figures. Results are shown in Tables 4 and 5.

The adjusted straight-line technique resulted in a final FSC forecast of a need for 437 beds by 1990 and 539 by 2000. Although these figures are considerably higher than those recommended by the DFAC report, they fall within the range of the three projections developed in the DFAC study. The DFAC study's high projection produced a capacity for the year 2000 of 549, a figure quite close to the FSC projection of 539.

Based on the results of their capacity study and proposals which they developed regarding the nature of a future countywide detention system, FSC formulated a capacity recommendation for the proposed facility. FSC recommended that the County construct a facility to house 383 persons, their projected capacity for 1985. They further recommended that steps be taken in the 1985-1990 period to provide separate facilities for sentenced prisoners requiring medium and maximum security housing. Transferring sentenced inmates to a separate facility would provide sufficient housing for unsentenced persons in the initial facility until the 1995-2000 period, when additional housing for unsentenced inmates would be required.

⁶The statistical technique employed was a "least squares" time series analysis. Using this technique, a relationship between bookings per 1000 population and time was developed from the historic data, and this relationship was projected through the year 2000.

Table 4

FACILITY SCIENCES CORPORATION

SUMMARY OF INMATE CAPACITY FORECASTS:
CONTRA COSTA COUNTY DETENTION FACILITY

<u>Average Daily Population</u>	<u>1980</u>	<u>1985</u>	<u>1990</u>	<u>1995</u>	<u>2000</u>
Unsentenced	219	251	285	318	352
Juveniles	13	15	17	19	21
Sentenced	37	43	49	54	60
Trustees	24	27	31	35	38
TOTAL	293	336	382	426	471
<u>Peak Faily Population</u>					
Unsentenced	255	292	333	371	411
Juveniles	15	17	19	21	24
Sentenced	41	47	54	59	66
Trustees	24	27	31	35	38
TOTAL	335	383	437	486	539

Source: Facility Sciences Corporation

Table 5

FACILITY SCIENCES CORPORATION
CONTRA COSTA COUNTY DETENTION FACILITY
POPULATION FORECAST BY CATEGORY

	MEN		WOMEN		TOTAL	
	Average	Peak	Average	Peak	Average	Peak
<u>1980</u>						
Potentially Violent	78	90	21	27	99	117
Non-Violent	115	132	5	6	120	138
Juveniles	12	14	1	1	13	15
Sentenced	30	33	7	8	37	41
Sentenced Trustees	23	23	1	1	24	24
TOTALS	258	292	35	43	293	335
<u>1985</u>						
Potentially Violent	90	103	25	32	115	135
Non-Violent	131	151	5	6	136	157
Juveniles	14	16	1	1	15	17
Sentenced	35	38	8	9	43	47
Sentenced Trustees	26	26	1	1	27	27
TOTALS	296	334	40	49	336	383
<u>1990</u>						
Potentially Violent	101	116	29	38	130	154
Non-Violent	149	171	6	8	155	179
Juveniles	16	18	1	1	17	19
Sentenced	40	44	9	10	49	54
Sentenced Trustees	30	30	1	1	31	31
TOTALS	336	379	46	58	382	437
<u>1995</u>						
Potentially Violent	113	130	31	40	144	170
Non-Violent	167	192	7	9	179	201
Juveniles	18	20	1	1	19	21
Sentenced	44	48	10	11	54	59
Sentenced Trustees	33	33	2	2	35	35
TOTALS	375	423	51	63	426	486
<u>2000</u>						
Potentially Violent	126	145	36	47	162	192
Non-Violent	183	210	7	9	190	219
Juveniles	20	23	1	1	21	24
Sentenced	49	54	11	12	60	66
Sentenced Trustees	36	36	2	2	38	38
TOTALS	414	468	57	71	471	539

Source: Facility Sciences Corporation

Analysis and Reconciliation of the DFAC and FSC Studies

In order to provide guidance to County staff and consultants involved in planning the detention facility, an analysis and reconciliation of the two studies was made at the request of the Project Manager. Personnel involved in the analysis and reconciliation process included members of the County Public Works and Planning Departments. They evaluated both studies and modified each to strengthen its methodological approach. The modifications resulted in a narrowing of the range between the capacity projections of the studies. This narrower range provided a more specific guide to those involved in the development of specific plans for the facility.

Analysis of the Capacity Studies

Because of the limited amount of historic data available, each study was limited by its reliance upon less than ideal data. In order to utilize historic incarceration data that reflected the age and sex of those incarcerated, the DFAC study necessarily relied upon certain statewide rate data as a proxy to county level data. Also, DFAC's age-sex profile of county inmates was based on a single day sample. The strengths of the DFAC study include its consideration of the changing age and sex characteristics of the population.

The FSC study also was limited by the shortage of historic data. FSC's projection of future incarceration rates was based upon only a 7 year sample of historic data. Additionally, the FSC methodology did not incorporate in any detail the county population's changing age-sex structure. The primary strengths of the FSC report lie in its thorough analysis of the impacts which future policy decisions, laws, social trends, and changes in justice system operations will have upon inmate population levels. Another strength of the FSC study is its separate projection of the populations of the various inmate groups (male/female, sentenced/unsentenced, etc.).

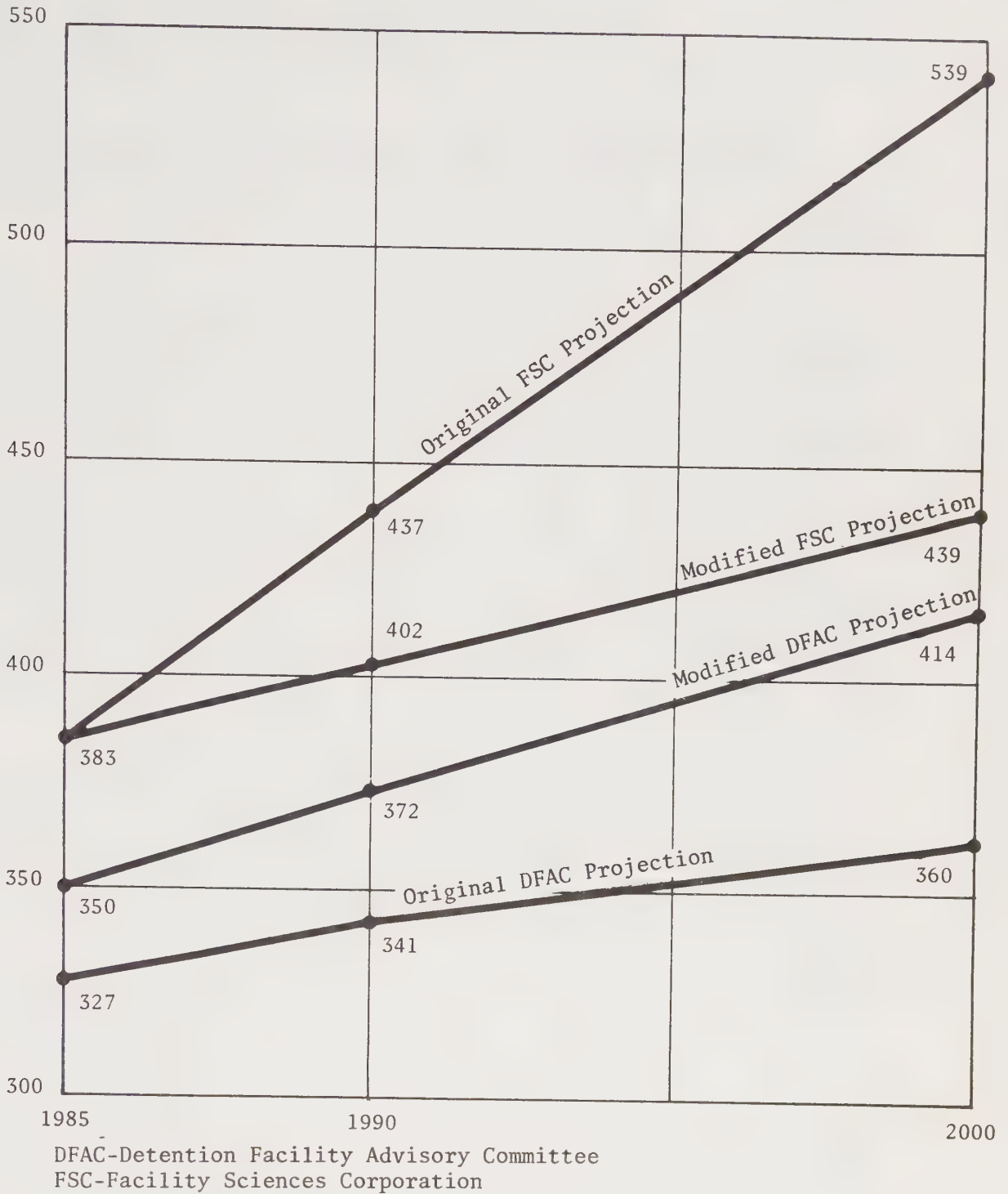
Reconciliation of the Capacity Studies

In reconciling the two studies the intent was to modify the findings of each study by strengthening some of the weak features. Analysis of the two studies indicated that this procedure would result in narrowing the range between the two.

The DFAC methodology was adjusted to eliminate certain inconsistencies arising from the use of historic statewide data. FSC's projection technique was modified to reflect demographic trends and their anticipated impact upon incarceration levels. The modifications of the two studies yielded the following projections, which account for juveniles, and medical housing, and exclude inmates detained in holding cells or in the hospital (see Figure 1 for graphic presentation):

Figure 1
SUMMARY OF CAPACITY RECOMMENDATIONS¹

PROJECTED
CAPACITY
NEEDS



¹Projections which are plotted exclude hospital and holding cell populations, but account for juveniles (Dixon Bill).
Prepared by Contra Costa County Planning Department.

<u>Year</u>	<u>Modified DFAC</u>	<u>Modified FSC</u>
1985	350	383
1990	372	402
2000	414	439

The modified projections not only refined the original projections made by each study, but also reconciled the results of the studies by narrowing the range between them. This resulted in a more specific guide for those involved in planning the County's detention facility.

The Capacity Decision of the Board of Supervisors

Once the two capacity studies had been completed and County government staff had had an opportunity to evaluate and analyze the findings and recommendations, the Public Works Director requested that the Board of Supervisors make an interim decision regarding the facility's capacity. The purpose of such a decision was to provide guidance and direction for those involved in facility planning.

The various elements and studies of the capacity planning process were meant to provide both information and guidance to the County in making decisions regarding the capacity of the proposed detention facility. The ultimate decision must be made by the county's governing body, the Board of Supervisors. It should be noted here that the Board's decisions are not based exclusively upon the recommendations of the capacity studies. Although they provide a valuable planning tool, other legal, financial, policy, and operational considerations must be integrated into the facility planning process. For example, the options available to the Board are limited by the amount of funding available for the project, \$20 million. Concerns such as the size of the available site, the relationship of facility size to efficiency of operation, and a desire to minimize impacts upon surrounding development are relevant to decisions concerning facility capacity. By previously agreeing to conform to the guidelines set by the National Clearinghouse for Criminal Justice Planning and Architecture, the Board recognized that organization's guideline that the size of a single facility be limited to 400 beds. In addition, the facility must comply with State requirements and standards regulating detention facilities. Another probable consideration in the decision making process relates to the development of integrated corrections planning, and such factors as constructing another facility for sentenced persons or building branch facilities in west county and east county. These considerations along with other plans, constraints, and political factors are necessarily integrated in to the decision making process.

On Tuesday, September 28, 1976 the Board of Supervisors approved a capacity range of 370-383 beds for the proposed facility. The 383 figure, which was selected as a maximum, was the capacity recommended by Facility Sciences Corporation (FSC). A lower limit of 370 was selected in order to provide a

range for planning purposes. Because of design features, internal space allocation requirements, etc., it is difficult to construct a facility to house a specified number of persons. Instead, it was decided to utilize a planning range, because it allows for flexibility in design and space allocations. The decision to select a figure below 383 to create a planning range resulted from a desire to select a figure closer to the Detention Facility Advisory Committee (DFAC) capacity recommendation.

Based upon the capacity range approved by the Board of Supervisors, plans were developed for a 2-4 story detention facility providing housing for 382 inmates.

IMPACTS

Impacts of the Capacity Decision

The capacity decision produces two types of impacts. It produces direct impacts which relate primarily to future capacity needs and plans and to considerations which are dependent upon the time at which the proposed facility reaches capacity. However, its primary influence is indirect, and will result from the influence which the capacity decision has upon the physical characteristics of the facility. This indirect influence affects virtually all aspects of the project's impact upon the environment. For instance, because it is a direct determinant of facility size, the capacity decision influences the intensity of the impacts which are related to facility size and occupancy levels, such as traffic and parking, visual impacts, air and water quality, energy impacts, etc. These impacts are addressed in the chapters which deal with each specific impact individually. However, it is important in this chapter to point out the influence of the capacity decision upon the environmental impacts resulting from the project.

An important facet of the capacity decision's impact relates to the county's future detention facility plans and needs. Given the general expectation of a growing inmate population, it appears likely that the proposed facility will reach occupancy capacity long before its useful life expectancy is reached. This suggests that the County needs to look beyond the current project, and begin planning for a county detention system which will meet the county's detention needs after the proposed facility reaches capacity.

Inmate population projections developed by reconciling the DFAC and FSC projections provide an indication of when the facility is likely to attain capacity occupancy levels. The reconciliation of the two capacity studies yielded the following projections:

<u>Year</u>	Low (Modified DFAC)	High (Modified FSC)
1985	350	388
1990	372	402
2000	414	439

The above projections suggest that one impact of the Board's capacity decision will be a need to provide additional capacity within 5 or 10 years after the proposed facility begins operation. Such a situation would affect County finances by requiring the commitment of additional funds to construct additional facilities. Criminal justice planning activities would also be affected. Renewed planning efforts aimed at development of a comprehensive and long term detention facility program are indicated.

Mitigating Measures

Mitigating measures designed to reduce the impacts resulting from the capacity decision's affect upon facility size and occupancy levels are discussed in the various chapters which compose this Technical Background Report.

A mitigating measure which would reduce the impacts that will occur when the proposed facility reaches capacity is to convert the facility to an exclusively pre-trial facility when it reaches capacity. Removal of all sentenced inmates would provide additional occupancy space for the unsentenced persons in the facility. However, it would also require the provision of housing space for the removed sentenced prisoners in another place. Some might be transferred to the rehabilitation center, but alternative housing space would be required for the remainder.

A measure which would mitigate the impacts resulting from the facility reaching capacity is the institution of on-going criminal justice planning efforts. The recent planning studies undertaken for the proposed facility found a shortage of reliable data upon which to base capacity forecasts and plans. This same problem is likely to afflict future planning efforts, particularly those that must be instituted to provided additional detention facility capacity. Consequently, to prevent this situation from re-occurring, a major facet of on-going planning activities should be the collection and monitoring of data necessary for future planning. Such a procedure would help provide advance warning of developing needs and problems and also provide a data base which could be used in developing future plans and forecasts. It is both more efficient and more effective to anticipate and plan for future needs and problems than to try to react after the fact.

Another means of minimizing the impacts resulting from the capacity decision is to maximize the utilization of alternatives to incarceration. The projections developed by the two studies were based upon the assumption that maximum feasible use of alternatives would be made. The Board of Supervisors has stated that the County will continue maximum utilization of alternatives available under existing law and consistent with the public's safety.⁷ A discussion of the present and future prospects for the use of alternatives to incarceration in Contra Costa County is presented in the Project Alternatives Chapter (No. 6).

⁷ Board of Supervisors of Contra Costa County, California, Board Resolution No. 76/201, March 2, 1976.

PROJECT ALTERNATIVES

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County

Contra Costa County Planning Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	6-1
Basic Alternatives	
Alternative 1: No Project	6-2
Alternative 2: Substitute Alternatives to Incarceration	6-3
Alternative 3: Remodel the Existing Jail Facilities	6-6
Alternative 4: Convert Non-Jail Buildings	6-7
Alternative 5: Construct the 1975 "Detention Center" Project	6-8
Alternative 6: Build a New Facility in the County Civic Center	6-8
Alternative 7: Build a New Facility in Another Location	6-11
Alternative 8: Build More Than One Detention Facility	6-16
Major "Footprint" Alternatives	6-20
Alternatives A and B	6-21
Alternative C	6-24
Alternative D	6-24
Alternative E	6-28
Illustrations	
Alternative A	6-22
Alternative B	6-23
Alternative C	6-25
Alternative D	6-26
Alternative E	6-27

INTRODUCTION

Purpose

The County of Contra Costa, California, is proposing to construct a Detention Facility in its civic center in the City of Martinez. It has been determined that an Environmental Impact Report (EIR) is required for the project. The California Environmental Quality Act of 1970, as amended, and its administrative regulations direct that an Environmental Impact Report present and investigate alternatives to the project under consideration. The purpose of this chapter is to set forth the main alternatives and discuss the consideration given to them in the course of arriving at the project as it was tentatively proposed by the Board of Supervisors on February 1, 1977, and is described in Chapter 2. On that date, the Board resolved: "The schematic design as presented by the project architect is approved subject to final decision following review of the project Environmental Impact Report."

As is the case with many major projects, the possible alternatives to the Detention Facility project are of several kinds: there is a range of basic alternatives, or courses of action, that were at least potentially available to the County at the start of the decision-making process; there are specific alternatives that received special attention either for comparative purposes or because they were proposed by various parties; and there is an almost infinite array of variations on those options.

In order to deal with this complex situation, this chapter has categorized the alternatives into two groups according to their applicability to the project at different stages in its evaluation. In order of presentation, these groups are:

1. Basic alternatives--the main courses of action actually or potentially open to the County in late 1975 when it took the first actions leading to the proposed project.
2. Major "Footprint" alternatives--the main options open to the County following a tentative decision on September 28, 1976, to locate the Detention Facility in the County Civic Center

Because the subject of this chapter is the main alternatives which preceded the formulation of the project proposal--which is a tentative and "schematic" design at this stage--it is left to other chapters to discuss the alternatives available to the County for refining the project before it is committed to construction. These include the details of the building's external design (Chapter 2), the choice of drainage installations (Chapter 11), and the particulars of traffic circulation and parking (Chapter 16). In addition, other chapters address alternatives for actions that would result from the project and which the County would be expected to consider once a final decision is made on the project. The latter include the future courts addition (Chapter 3) and the disposition of the existing Main Jail building (Chapter 23).

BASIC ALTERNATIVES

Background

In 1975, Contra Costa County's decade-long effort to build a "Detention Center" (jail and courts complex) in the County Civic Center of Martinez evolved to a point just short of the call for construction contract proposals. However, for reasons which are discussed in the Project Description Chapter, the Board of Supervisors made a complete reappraisal of the existing proposal. This reappraisal resulted in a decision by the Board, in December, 1975, to terminate that proposal. In February, 1976, the Board directed that the detention facility project be restudied and that new plans be developed. At this initial stage in the present project's planning process, eight basic alternatives which had the potential to legally and humanely satisfy the detention needs of the county, were potentially available to the county. These were:

- Alternative 1: No Project (Abandon the project altogether)
- Alternative 2: Substitute Alternatives to Incarceration.
- Alternative 3: Remodel the Existing Jail Facilities
- Alternative 4: Convert Non-Jail Buildings
- Alternative 5: Construct the 1975 "Detention Center" Project
- Alternative 6: Build a New Facility in the County Civic Center
- Alternative 7: Build a New Facility in Another Location
- Alternative 8: Build More Than One Detention Facility

Before beginning the analysis of the various alternatives it is important to note that one consideration, timing, is relevant to the evaluation of each alternative. Because of the acknowledged inadequacy of the existing County Jail, it is a major legal and practical concern that replacement facilities be made available soon (Chapter 2). Another inducement for rapid construction is inflating construction costs (Chapter 22). Consequently, the sooner the facility is constructed the less it will cost the County. This is an important consideration because the county has a fixed amount of funding available for a new detention facility.

It is important to note that in evaluating the various alternatives the concern about timing tends to generate a bias toward those alternatives which could be implemented most rapidly. It was felt that this should be pointed out before presenting an evaluation of the various alternatives in order to avoid excess emphasis upon this consideration during the analysis of alternatives.

ALTERNATIVE 1: NO PROJECT

The Environmental Impact Report process requires that the "no project" alternative be considered. In this instance, selection of the "no project" alternative would mean continuing to use the present Main Jail and Branch Jail without significant change. However, as has been discussed throughout the Background Report chapters, those facilities are inadequate for reasons of housing space, program space, inmate segregation capabilities, inmate services and capacity. For example, in its March, 1976 Report of Inspection of Local Detention Facilities to the California Legislature, the State Board of Corrections pointed out that the

County's present Main Jail (Martinez) is continually overcrowded and that the Branch Jail (Marsh Creek) is unacceptable from the point of view of inmate segregation and security. Several county grand juries have reached similar conclusions (Chapter 3).

The Main Jail has been found to be structurally deficient with respect to seismic and fire safety. The project architect, Kaplan and McLaughlin concluded that the building would not acceptably withstand a major earthquake and that its performance in a moderate earthquake is questionable.¹ The draft EIR for the previous "Detention Center" project discussed the building's fire safety deficiencies.²

The County has found continued use of the Main Jail to be unacceptable (Resolution 76/440, June 10, 1975), and the judiciary has altered the use of the Branch Jail even as this EIR was being prepared. The "no project" alternative, then, is not feasible.

ALTERNATIVE 2: SUBSTITUTE ALTERNATIVES TO INCARCERATION

Throughout the history of the Detention Facility project and its predecessors, critics of the County's plans have urged the increased use of alternatives to incarceration as a means of eliminating jails, or as a means of avoiding a detention facility project, or as a means of reducing the scale of a detention facility project. They have cited programs being used in other jurisdictions, but not by the County, or possibly being used with greater effect elsewhere, as reasons that the County could reduce its jail population.³

The County has responded to this criticism by noting that it too is interested in keeping its jail population to a minimum, that it is doing about as much as it can under the law and with its resources to release people who have been arrested or convicted, and that it is actively investigating new programs.

In early 1976, the Board of Supervisors directed that the new Detention Facility should be designed to maximize the use of alternatives to incarceration (Chapter 3), and it directed the Mental Health Advisory Board to serve as its Advisory Committee on alternatives to incarceration programs.

¹ Kaplan and McLaughlin, "Contra Costa Detention Facility Site Selection and Development Study", November 24, 1976, pp. III-26, III-27.

² Contra Costa County, Criminal Justice Detention Facility EIR Response Document and Second Appendix, 1975, pp. II-13 - 15.

³ Alternatives to incarceration encompass a broad range of programs which may serve as substitutes to incarceration in a detention facility, by achieving the same goals as incarceration by another means. Programs include alternatives to apprehension and arrest, alternatives designed to ensure the appearance of unsentenced offenders in court as scheduled, alternatives to incarceration as punishment for violation of the criminal code, or alternatives which serve as a means of rehabilitation. Alternatives serve to limit detention facility population levels in two ways; by reducing the length of time people spend in detention or reducing the number of persons who are committed to detention.

The proper use of alternatives to incarceration is one of the more complex, controversial, and ambiguous subjects in the field of criminal justice planning. It is a subject complicated by programs with overlapping effects, the employment of judgement, legal constraints and interpretations, conflicting beliefs, and the interactions of different parts of the criminal justice system (i.e., police, courts, corrections). It can be said that it is a subject where every argument can be answered, but every answer is arguable.

With respect to the relationship between alternatives to incarceration and the Detention Facility project, to wholly eliminate the need for a County "jail", alternatives to incarceration programs would have to provide for all classes of pre-trial and maximum security inmates now being held; and, to eliminate the need for a new County detention facility project, alternatives to incarceration programs would have to provide for all but 100 or fewer inmates who could be accommodated in a remodeled Main Jail (assuming the existing Main Jail is physically suitable for remodeling).⁴ Neither of these is feasible. As long as State law requires the County to accept several classes of prisoners, and makes certain crimes subject to arrest and incarceration, the County must provide a detention facility. And, as long as there are substantially more than 50-100 pre-trial and maximum security inmates who must be held by the County a detention facility project is a necessity. The alternatives to incarceration issue, then, really concerns their potential to influence the size and, to some extent, the function of the proposed facility.

It is useful at this point to review some assumption regarding future County inmate capacity needs. The County has made certain projections regarding detention facility capacity needs in the short run following construction (to 1985) and in the period through the year 2000 (Chapter 5). These essentially indicate that a new County facility designed for about 400 inmates (the project is for 383 inmates), which is the upper limit for a single facility built in accordance with national guidelines (Chapter 4), would reach capacity in the 1985-1990 period. The assumption is that a new facility, or facilities, will be required at that time.

Presumably, if the County is presently incarcerating significant numbers of inmates who could be released under existing programs, the forecasts might be erroneous and a lower design capacity might be practicable. Contra Costa County, however, appears to operate with little margin for increased releases under present laws. This is reflected in a finding by the State Board of Corrections that in 1974-75 only two California counties, both rural, had lower incarceration rates. More particularly, responding to inquiries to the effect that Contra Costa County might be holding substantial numbers of people for processing for minor offenses, the State Board of Corrections directed their staff to make an investigation.⁵ The following is excerpted from a state memorandum regarding that survey:

⁴ County of Contra Costa Draft Environmental Impact Report, Contra Costa County, California, Criminal Justice Detention Facility, January 1975, pp. 221, 222.

⁵ Smith, Edgar A., State Board of Corrections Memorandum (to Howard D. Sutliff). June 27, 1975.

"On a number of occasions we have been asked for information on the detention practices of the County. The only information available to us has been the rate of incarceration per 10,000 population, which is a very gross measure based upon a one day count of the number of persons in detention in each county. In order to obtain a more accurate assessment of detention practices, we made an unannounced survey of the unsentenced prisoner population in the Contra Costa County Jail and Branch Jail on Wednesday, April 16, 1975.

"...there was a total of 130 unsentenced prisoners at the Main and Branch Jails. Of the total, only three were eligible for release by the Jail staff. Two of the three had been reviewed for release under P.C. 853.6 and were found to be ineligible. One case was pending review and was probably going to be released on his promise to appear. I believe the results confirm the Sheriff's contention that all possible means are being used to reduce pre-trial detention."

(On the day of inspection, 77 inmates were there on court "holds", 50 were charged with felonies, and three with misdemeanors---all three with battery.)

Two other examples are illustrative. In May of 1976, the State Board of Corrections responded to a Detention Facilities Advisory Committee inquiry with the following reply:

"The Board of Corrections does not believe that a significant number of prisoners being held in jail awaiting trial could be diverted to more economical community-based programs without posing a danger to the community and assuring a person's appearance in court".⁶

And, the project's programming consultant, Facility Sciences Corporation (FSC), examined current county pre-trial release policies in order to determine to what extent the expanded use of alternatives could reduce inmate population levels. They noted that Contra Costa County's opportunities to increase release rates, and consequently, to decrease the number of persons detained are slight.

In view of these findings and opinions, the forecasts appear to be reasonable at this time.

A consideration that could change the accuracy of the forecasts over time would be substantial changes in public attitudes and laws regarding the use of alternatives to incarceration. The prospects, however, are highly contradictory. Based on the recent past, a period of increasing permissiveness and liberality, one might expect the state's laws to provide more opportunities and resources to divert people from incarceration. But, a different expectation is equally or more possible if one considers very recent attitudes and events. The public

⁶Smith, Edgar A., Ibid.

⁷Facility Sciences Corporation, Contra Costa County Detention Facility Service Program, December 10, 1976, pp II-17 - 11-27.

appears to be increasingly concerned over rising crime rates and the state legislature is reacting with more conservative laws and programs which may result in more people being incarcerated and for longer periods of incarceration.

Recent State laws ending indeterminate sentencing and sentencing older juveniles who commit serious crimes to non-juvenile facilities¹ are two examples of legislation increasing facility capacity requirements. There is also the possibility that the two trends could operate simultaneously, but selectively. At this time, then, there is no clear expectation that new legislation on alternatives to incarceration will substantially lower the county's incarceration rates in the future, and they could be increased.

The result of the preceding commentary is that new practices or legislation regarding alternatives to incarceration do not appear to offer substantial opportunities in the near future to modify the forecasts on which the proposed Detention Facility project is based.

ALTERNATIVE 3: REMODEL THE EXISTING JAIL FACILITIES

One alternative to replacing the existing Main and Branch Jail facilities would be to remodel them to correct their deficiencies and upgrade them to provide adequate detention conditions. This course of action often has been suggested, primarily for the Main Jail (the Branch Jail usually is conceded to be a temporarily converted honor farm dormitory that should revert to its intended use), by critics of a large new facility for detention. Their reasons variously include claimed lower building costs, the desire to obviate the construction of a large building in the civic center, and the desire that the county maintain limited capacity facilities to accommodate only very dangerous persons.

In the past, the remodeling alternative would have involved rebuilding the Main Jail to satisfy the California Minimum Jail Standards (Chapter 4) as well as fire and seismic safety requirements. Now, since the Board of Supervisors has resolved to comply with recognized national guidelines, including but not limited to Standard 11.1 of the National Advisory Commission on Criminal Justice Standards and Goals, any remodeling should also comply with applicable portions of these guidelines.

Because no drastic change seems imminent in the laws under which Contra Costa County operates its criminal justice programs that would markedly change (reduce) the number of inmates who must be accommodated, or incarceration rates (see Alternative 2) the County must plan for a large and growing inmate population (Chapter 5).

Under the State of California Minimum Standards for Local Detention Facilities (Title 15, California Administrative Code), the State Board of Corrections has rated the Main Jail at a capacity of 104, and the Branch Jail at 50, for a total of 154. If the Branch Jail at Marsh Creek were reverted to rehabilitation use instead of being re-modeled, and if program space would be provided at the Main Jail, its capacity would be reduced below 104 inmates.

These ratings are based on utilizing for housing purposes all space presently used for housing. However, since there is a need to allocate considerable space for recreation, inmate services, medical services, and other programs, remodeling that would also provide for these would reduce the combined capacities of both facilities well below 154. (Remodeling the Main and Branch Jails to satisfy the applicable guidelines would probably provide space for no more than 100 inmates, according to the EIR prepared for the previous "Detention Center" proposal.)⁸

Since the average daily inmate population of the Main and Branch Jails presently averages about 250 (average for last quarter of 1976 was 251.8 persons per day), remodeling these facilities to comply with only California Standards would result in an immediate capacity deficit of about 150 inmates. Remodeling these facilities to meet national guidelines would result in even larger deficits.

An important consideration with respect to remodeling is the structural condition of the present Main Jail. The Detention Facility architect, Kaplan and McLaughlin, evaluated its structural condition as part of its site selection and development study.⁹ They concluded that the building would not withstand a major earthquake and that its ability to withstand a moderate earthquake is questionable. They also noted that unless the present interior walls were retained in place, the costs of rehabilitating the structure would be on the order of, if not greater than the cost of building a new structure.

Because of the inability of the existing facilities to provide significant capacity, and because of the considerable problems and costs involved in making the present Main Jail structurally sound, the County rejected this option.

ALTERNATIVE 4: CONVERT NON-JAIL BUILDINGS

Another alternative which incorporates remodeling is the conversion of other buildings to detention facility use. This possibility was raised by several persons during the public review of the EIR for the 1975 "Detention Center" project. Among their suggestions were the use of the former Martinez Community Hospital and the "Mothball Fleet" of deactivated U.S. Navy ships anchored near Benecia. (Chapter 3)

The main problem with this alternative is finding buildings which could be practicably and economically converted to detention use. Detention facilities are specialized buildings. Since the applicable state requirements and national guidelines must be satisfied, it would be difficult to find buildings which could be converted so that they satisfy the applicable requirements, even with the investment of a considerable sum of money. It is possible that the costs of conversion would be more expensive than new construction.

⁸ Contra Costa County, Draft Environmental Impact Report, Contra Costa County, California, Criminal Justice Detention Facility, January, 1975, pp. 221, 222.

⁹ Kaplan and McLaughlin, "Contra Costa Detention Facility Site Selection and Development Study", pp. III-25 - III-32.

The feasibility of this alternative is also strongly influenced by the significant amount of building space required for the project. Assuming space allocations similar to those proposed for the Detention Facility project, approximately 186,000 square feet of floor area would be required. As an indication of how much building space this represents, the 12 story County Administration Building, and its North Wing, in Martinez, at approximately 144,000 square feet of floor area, contains less than that amount. Given the large amount of space required, finding a large enough building or building group to convert to detention uses would be difficult, in the Martinez area.

The County has rejected this alternative as infeasible, given the amount of space required, and the complex standards which must be met by any structures used for detention.

ALTERNATIVE 5: CONSTRUCT THE 1975 "DETENTION CENTER" PROJECT

At the start of the Board of Supervisors' reconsideration of the detention facility situation in late 1975, the option of proceeding with the "Detention Center" project was one of several courses of action open to it (see Chapter 3 for background to this discussion). The alternative was one of four presented to the Board by the County Administrator on December 22, 1975, and a variant of it, calling for a reduced cost version, was a second.

However, between June 1975, when the Board approved that project's building plans and that December meeting, several things had taken place that made this alternative marginal. One was the agreement with State Senator Nejedly to provide a minimum of one-third single-occupancy cells which would have increased construction costs, as would have the addition of slit windows which also were under consideration.¹⁰ A second was the successful drive by project opponents to put to vote the matter of whether or not the County should adhere to "national guidelines" for its new detention facility. Although the matter ultimately was defeated by the electorate, the initiative had the effect of making these guidelines a County political issue. Finally, the report of the County's cost evaluation consultant, the William Simpson Construction Company, indicated that inflation had raised the probable cost of the project from about \$20 million to a new figure of \$26 million, or about \$6 million (not including courts) more than the County had accumulated for the project.

The combination of organized opposition, an obsolete design, and extremely high costs made the 1975 Detention Center project less desirable than a new design by early 1976, and the Board of Supervisors terminated the project on February 10, 1976.

ALTERNATIVE 6: BUILD A NEW FACILITY IN THE COUNTY CIVIC CENTER

Historically, county plans to build a new detention facility have focused on the County Civic Center in Martinez. As early as 1963, the Contra Costa County Civic Center Plan proposed a jail/courts facility there. Subsequently that proposal

¹⁰ The modifications would have increased the design capacity to over 400 by using an additional floor level for cells.

was reflected in the County's and the City of Martinez's general plans (Chapter 19) and land was acquired for Civic Center development (Chapter 2). It was recognized that courts and governmental agencies comprising a large part of the County's criminal justice system were already present there (Chapter 23).

The County Civic Center also had disadvantages: space for buildings and parking was not ample (Chapter 2); the Civic Center adjoined residential development (Chapter 18), accessibility was not as good as at some other locations (this chapter), and the areas' geology posed some problems for certain kinds of construction.

There were four main courses of action available to the County for building a new detention facility in the County Civic Center, and these are discussed below.

Alternative 6a: Build a Redesigned Facility on the "Detention Center Site"

Selection of the former one and one-half block "Detention Center" site (or a similar area) would have had the advantages of a considerable body of available information, including soil and geologic studies and an EIR dealing with the location, and completed land assembly. If an acceptable building could have been designed for the location, it probably offered the fastest redesign opportunity of any of the alternatives.

The site's disadvantages, however, were substantial. The relatively small site (about 1.4 acres) required a 6-story building under the former design criteria that allowed space-efficient multiple-occupancy cells and provided for 343 inmates. The new design criteria (Chapter 4), calling for single-occupancy cells and a somewhat larger design capacity, would have resulted in a much larger and probably taller building. The site's location on a highly visible elevation in the Civic Center and immediately adjacent to residential development was controversial in 1975, and would have been objectionable in 1977. Furthermore, the combination of a large building and the site's geologic conditions probably would have required driving foundation piles for the new project, just as piles were required for the previous project. This would have added considerably to project costs (high foundation costs were one reason for the ultimately unacceptable price of the "Detention Center") and resulted in a period of high noise and vibrations during construction.

This alternative failed to receive serious consideration after high-rise construction in the Civic Center was rejected by the Detention Facility Advisory Committee early in the design process.

Alternative 6b: Build a Redesigned Facility on a New Site Within the Civic Center

Compared with the limitations of the "Detention Center" site, the alternative of selecting a new site within the County Civic Center offered clear advantages: a less obtrusive location was possible, a lower building that did not block views and did not require pile foundations was feasible, increased building ground coverage could be accommodated, and less expensive building construction was practicable. There were also better opportunities to relate the Detention Facility building to parking and to other buildings in the Civic Center.

The disadvantages of the alternative included the prospect that the project would almost totally absorb remaining space in the Civic Center if a relatively low height design was selected, the possibility that street and utility relocations would be results and that long-standing plans and policies would be over-turned.

The Board of Supervisor's action of November 9, 1976, agreeing with a Detention Facility Advisory Committee recommendation that a new design should be based on "Alternative D/E" (described later in this Chapter) embraced this alternative.

Alternative 6c: Build a High-Rise Facility Structure¹¹

Given the presence of several high rise buildings in the County Civic Center area (e.g., the Administration Building - 12 stories, the George Gordon Center - 6 stories), the functional interactions between agencies, and the limited amount of land available for Civic Center expansion, a high rise facility is an option with considerable technical, aesthetic, and economic merits.

Even a relatively low six-story high rise facility would have the advantage of occupying considerably less ground area than the proposed facility. Assuming the proposed 186,000 square feet of floor area, the amount of land area covered by the structure could be reduced to as little as 32,000 square feet (compared to a proposed 88,000 square feet). This would free more area for parking, potential sites for other County government structures, and other uses.

A high rise facility would likely be more expensive to construct, particularly because of soil conditions which would probably require driving pilings through the alluvium to the bedrock below, in order to provide an acceptable foundation for a heavy structure (which concentrates its weight in a relatively small area). Pile driving operations would significantly impact living and working conditions in the project area. In addition, the cost of constructing a high rise building itself probably is greater than the costs of constructing a low facility. Another major disadvantage of a high rise facility is that perceived adverse visual and aesthetic impacts may result from its height (e.g., it would be a prominent visual feature to the surrounding area, and it could block views if placed on higher ground or near existing residences). Also, concern has been expressed that a high rise structure would cause deterioration of the small town character of Martinez.

This alternative was given little consideration because it was known to be unacceptable to the adjoining community, and because it was anticipated that the cost of construction would exceed the County's available financial resources.

Alternative 6d: Build a Low to Moderate Height Structure

The previous "Detention Center" project was much criticised because of its 6-story design, which would have blocked views and become a prominent feature of the Martinez skyline. Opponents of the project advocated a low-rise, or

¹¹ Definitions vary, but a 5-6 story building would be the lowest to be called high rise.

at least lower, design which would be more in keeping with prevailing building heights in Martinez. The desire to have the new Detention Facility designed as a low building was almost universal among Martinez residents who were consulted in the planning stages of the current project.

Early in the design process, it became apparent that a truly low-rise (one or two story) building was impractical in the Civic Center if the Detention Facility had to accommodate the County's unsentenced inmates for the next decade and provide needed parking.

A single story facility presents an especially difficult problem because the amount of floor area required is so great. If the proposal's 186,000 square feet of floor area were all placed on a single floor, the building would cover over 4 acres. Given the limited amount of land available in the Civic Center site (the site area available is approximately 7.5 acres), and the need to provide substantial parking facilities, a facility which consumes so much land is infeasible.

A two story facility with equivalent floor area would probably be somewhat less costly to construct than the proposed facility. It would have the disadvantage of covering more ground area than the proposed facility, thus leaving less space for parking purposes.

The eventual decision (by the Board of Supervisors on February 1, 1977) was to proceed with plans for a moderate-height structure that would be essentially four stories high (two main levels of two stories each). The building would be about 40 feet tall with rooftop equipment installations adding about 6 - 8 feet in several places.

ALTERNATIVE 7: BUILD A NEW FACILITY AT ANOTHER LOCATION

An obvious alternative to the present project is to construct the proposed facility, or a variation of it, at another location. This approach was discussed in connection with the previous "Detention Center" project and it was again considered during the current planning process.

In evaluating alternative locations for detention facilities, certain factors are particularly important. One is that land for a site must be assembled and acquired. This is a time-consuming process, especially if the land is held in multiple parcels. A second is that new location often require general plan amendments because large areas are seldom set aside in advance for public uses. The amendment process also requires time to accomplish.

Access and transportation considerations are important in terms of the police transporting persons to the facility, and convenience for visitors and trial-ready inmates. Also important is the coordination of the new facility with other elements of the criminal justice system. Proximity of the facility to the courts is a particular concern because inmates frequently need to be transported to and from court for trials. A detention facility which was not located in central Martinez could be serviced by branch Superior Court facilities, but these would have to be provided near the new facility. Funds to construct the branch court facilities would have to be obtained.

Another location consideration derives from the fact that some authorities in the field of criminal justice believe that inmates should be incarcerated in the communities in which they live or as close as practicable. A criticism of both the previous and present projects is that Martinez is both too distant and too socially different from the home communities of many of the inmates. Other relevant factors include potential citizen opposition, the costs of purchasing land and construction, future county facilities planning, and the time it would take to implement any specific alternative.

The number of potential specific alternative locations is extensive. However, in this analysis location is defined in general terms, such as in the civic center area, or in west county, etc. The intent here is to analyze broad locational considerations, such as those mentioned above, rather than evaluate specific alternative sites (which are even more numerous). Four locations are considered: the Marsh Creek area, a different central county location, west county and east county. It is felt that an evaluation of the four will result in adequate consideration of the broad locational alternatives, and provide information which is applicable to consideration of specific sites.

Alternative 7a: Build a New Facility in the Marsh Creek Area

The 1963-1964 County Grand Jury originally suggested constructing a new large detention facility in the Marsh Creek area, at the site of present Branch Jail and Rehabilitation Center, and establishing a temporary holding facility in Martinez. (Chapter 3) Under that proposal, the new facility would take the place of the proposed project, while a new small Civic Center structure or a remodeled Main Jail would provide temporary detention for inmates going to and from trial.

Variations could extend to building almost all detention capacity at Marsh Creek, or even adding other criminal justice functions such as Sheriff's facilities or courts. The Marsh Creek location was selected as a potential alternative because addition of the new detention facility to the existing Rehabilitation Center would bring about a clustering or complex of detention facilities in the area.

This alternative has the advantage of a rural location. Constraints upon design would be minimized because County-owned property is plentiful and there is no concentration of neighboring residents and merchants who might be adversely impacted by the construction of the facility. Also, low-rise construction could be used to build a facility of one or more buildings at comparatively low cost. Thus, this alternative would reduce or eliminate the adverse social, cultural and visual impacts expected to result from the proposed project, and minimize direct building costs.

The remoteness of the Marsh Creek location would result in some disadvantages. It would be more time consuming for most county police to transport arrested persons to Marsh Creek. Also, the significant distance between Marsh Creek and the courts in Martinez would create a logistics problem with respect to transporting inmates to and from court. Provision of branch court facilities

at Marsh Creek could reduce such logistics problems. Public access and convenience would be a much greater problem at Marsh Creek than at the Civic Center location in Martinez. Since there is no public transit to the Marsh Creek area, and access by auto is limited to a winding rural two-lane road which provides access to major thoroughfares only after passing through several residential communities, visiting would be inconvenient for most visitors and virtually impossible for those without autos.

A major concern with respect to the Marsh Creek location is that there are no sewer lines into the area and the location is not within the boundaries of a sanitation district. The Rehabilitation Center and Branch Jail currently utilize a septic tank, but given the necessary size of the new facility it is doubtful that an adequate leach field area could be provided for a septic tank serving a facility with 370 or more persons. Thus it would probably be necessary to construct a treatment plant on site or build a pipeline and pumping system which would pump sewage approximately six miles to a connection with the Concord treatment system at Clayton. Either project would represent a very costly major undertaking, and have significant impacts on the natural environment.

This option has been rejected for the following reasons: the sewage and utility problems and attendant cost implications, the poor accessibility and logistical problems which would affect local law enforcement agencies and the public, the cost of operating two facilities, public acceptability, and general remoteness to persons visiting or doing business with a detention facility.

Alternative 7b: Build a New Facility at a Different Central County Location

The possibilities of building a new detention facility, a new criminal justice complex, or even a new County Civic Center (with or without a jail) outside of Martinez have been considered by a number of people on different occasions. These proposals have failed to materialize as their short term costs became evident, as individual county functions actually were decentralized, and as available sites were developed for other uses.

Early in the present Detention Facility planning process, the Site Location Subcommittee of the Detention Facility Advisory Committee studied the question of whether the new facility should be located in the County Civic Center in Martinez or at a new location in Central County. Their report, recommended that the new facility should be built in the County Civic Center because of the facility's relationship to the courts and other services already present in the County complex.

Later in the planning process, the project's programming consultant, Facility Sciences Corporation (FSC), prepared a report on alternative locations.¹² In the report, FSC examined only two locations, the Martinez Civic Center and a county-owned property of approximately 35 acres located in the northeast quadrant of the interchange of Highways 680 and 4. The freeway interchange

¹²Facility Sciences Corporation, "Alternative Locations, Contra Costa County Detention Facility", September 8, 1975.

location was assumed by FSC for the purpose of analysis to be a surrogate for, or representative of, all non-Civic Center locations in Central County. The freeway interchange property exhibits several characteristics which would be desirable in a non-Civic Center central county location. These include: already county-owned, (no acquisition problems), large enough to accommodate low-rise construction, surface parking, and future expansion, located near the intersection of the county's major north-south and east-west freeways, essentially open undeveloped land without major constraints to structural improvement, located near the county's center of population, and located within reasonable distance of the courts and other criminal justice facilities (4.5 miles from County Civic Center).

FSC made a comparative evaluation of the costs of constructing and operating a detention facility for both the Martinez Civic Center and the interchange location. They determined that a facility built at the interchange location would be less expensive to construct but more expensive to operate, but that the cost differentials would not be great. A construction cost differential of \$125,000 was projected, and the interchange location was estimated to cost \$65,000 more per year to operate, due primarily to transportation expenses. In addition to the increases in transportation expenses, the interchange location would generate operational inefficiencies in transporting inmates to and from the courts in Martinez (unless branch court facilities were provided), which could cause delays in judicial proceedings. Inconveniences would also result for attorneys, probation officers, and visitors.

Of the two locations, the Civic Center would provide for the most rapid completion of the project. FSC estimated that an alternative location would probably result in a 12 to 24 month delay (as of September, 1976) when compared with the Civic Center location.

The interchange location would have some advantages. Access from other areas of the county by auto would be improved by selection of a location near the intersection of Highways 4 and 680. Both county law enforcement officers and the public would find access by auto quite convenient. Currently there is no access by public transportation, although the AC Transit BART-feeder bus system that serves Martinez could be relatively easily rerouted to serve the facility. Adverse social and demographic impacts would be lessened by selection of the Highways 4 and 680 intersection location since the potential site is large and neighboring residences are few. The intersection location would also provide greater expansion potential.

The two major reasons why this option has been rejected by the County in favor of the Civic Center location are: (1) the physical separation of the criminal justice system components which would result, primarily between the detention facility and the courts, and other essential ancillary services and (2) the additional time required to construct a non-Civic Center facility.

Alternative 7c: Build a New Detention Facility in West County

The option of constructing a detention facility in west County has received considerably attention during the county's decade-long effort to provide a new

detention facility. The following discussion examines the option of constructing a single west county facility to provide for all of the county's pre-trial detention needs. The option of constructing a west county facility in conjunction with a facility in central county, to create a two facility detention system, is examined in Alternative 8. By west county is meant the urbanized area which extends from Richmond and El Cerrito along the Bay to Crockett and Rodeo. Since the Richmond-San Pablo area is centrally located with respect to west county's population, it is the most likely location of a west county facility.

A west county facility deserves consideration because of the large number of inmates who come from that area. An April 15, 1976 census of the county's detention facility population found that 53.9% of the inmates who were county residents lived in west county. In addition, a significant percentage of the out of county inmates were from Alameda County communities in the vicinity of west county (primarily Oakland). Consequently, construction of a facility in west county would best satisfy the criteria of providing detention near the residences of the inmates. It would also provide convenient access for that area's police, attorneys and visitors. Because extensive public transportation is available in west county, a facility located there would be more accessible by public transit.

The disadvantages of a west county facility include the problems of coordinating activities with the courts and other criminal justice agencies, the resulting inconvenience for central and east county police and visitors, and the time required to construct a west county facility. Location of the county's pre-trial detention facility in west county would complicate the operation of the criminal justice system, since the Superior Court, County Counsel, District Attorney, and other ancillary agencies have most of their operations located in Martinez. Given the high level of interaction required between these agencies and the detention facility; particularly as inmates are brought to trial, locating the detention facility in west county could hamper judicial processes. This impact could be partially mitigated through the expansion of branch courts and other criminal justice operations presently located in west county. Funds for this purpose would have to be obtained. A west county location would substantially inconvenience police and visitors from central and east county because of the significant travel distances which would result. Another concern is that a west county facility would take significantly longer to implement since an acceptable site would have to be found, and new plans would have to be formulated.

Because of these disadvantages, the County did not give formal consideration to this alternative during the 1976-77 planning effort.

Alternative 7d: Build a New Facility in East County

Although it has not been widely discussed as a feasible option, a brief presentation of an east county location is made in order to provide a discussion of all possible locations.

East county comprises the area east of the Diablo range and west of San Joaquin County and includes the urbanized area of the Pittsburg-Antioch Plain (West Pittsburg, Pittsburg, and Antioch), and the delta lowlands at the eastern edge

of the county (Oakley, Brentwood, Byron area). It is the least populated area of the county, and contained 14.5% of the county's population in 1975. However, its share of the county's inmate population has been somewhat larger than its share of the total population. The April 15, 1976 inmate census revealed that 17.1% of total inmates were from east county, as were 22.8% of county resident inmates.

East county's distance from the county's major population concentrations, the residences of most inmates, and the other components of the criminal justice system make it a less desirable location for a single large county detention facility than are several other alternatives. Construction of a facility in east county would generate significant transportation difficulties for police, attorneys, and visitors. For example, Antioch, which is nearer other population centers than are most parts of east county, is roughly a half hour drive (one-way) from central county, and an hour drive from west county. Since the majority of county resident inmates currently come from west county, and most of the remainder are from central county, construction of a facility would make access a major obstacle because of the significant distances and travel times involved.

For the above reasons, the alternative of an east county location was not given formal consideration during the 1976-77 planning effort. (The more feasible alternative of locating a satellite facility in east county is explored in Alternative 8.)

ALTERNATIVE 8: BUILD MORE THAN ONE DETENTION FACILITY

The alternative which has perhaps received considerable attention in recent years is a multi-facility concept, with most discussion focused upon a system with one facility in west county and another in central county. Another variation of this concept involves a system with one main detention facility and one or more satellite facilities. These two options appear to be the most feasible multi-facility alternatives, and consequently are the two considered in this section.

Alternative 8a: Construct One Facility in Central County and Another in West County

This alternative was discussed in the Bay Area Social Planning Council's 1972 Study.¹³ The Council recommended that the county construct a relatively small maximum security facility, not to exceed 225 beds, in Martinez; and a multi-security adult facility, not to exceed 220 beds, in west county. The following analysis of a two facility system will generally assume the development of a system conforming to the Council's recommendations.

¹³ Alternatives to Incarceration and Proposed Improvements in the Jail System in Contra Costa County. The Bay Area Social Planning Council is a social planning organization which was hired by the County to study the existing jail system and determine feasible alternatives to the detention of adult violators.

The two-facility approach developed out of a desire to provide for the detention of inmates from west county near their homes. Since about half of county resident inmates are from the west county area, and since, additionally, the population centers of the western part of the county are both physically separated and somewhat different culturally and economically from central county, it is reasonable to consider constructing a facility to serve west county. Such a facility would satisfy the recommendations made by some corrections authorities that inmates be incarcerated as near as possible to their home neighborhoods. In fact, one reason the Bay Area Social Planning Council recommended a multi-security facility for west county was to provide a substitute to the Marsh Creek Rehabilitation Center for west county inmates.

A west county facility would be advantageous to the west county area on a transportation basis. Visiting attorneys, friends, and relatives of inmates from there would find it much more convenient to visit than a Martinez facility because of its proximity and because of west county's more extensive public transportation network. Another advantage of a west county facility would be the opportunity to reduce the intensity of the impacts in Martinez by construction of a smaller facility there.

The primary disadvantages of the two facility concept are higher costs, extended time, and greater difficulty in coordinating criminal justice activities. The cost of both constructing and operating two large detention facilities would be substantially greater than for a single facility. Constructing two separate facilities is more expensive than constructing a single facility, and operating two facilities would require more staff, thus increasing operating costs. The two facility system would take considerably longer to implement since two new structures would need to be designed and at least one additional site must be selected. Finally, the two facility system would most probably require other components of the justice system, such as the courts, to locate additional branches in west county. Although this may be seen as a disadvantage in terms of internal coordination, operating expenses, and the provision of new facilities for west county branches, it might be advantageous for a geographically diverse county such as Contra Costa to decentralize its criminal justice system.

This option is not incompatible with the proposed detention facility project (except in the form proposed by the Bay Area Social Planning Council). It has been rejected for the present by the Board of Supervisors because of the significantly higher costs, primarily for operation, and because of the longer time required to implement a two facility system.

Alternative 8b: Construct a Main Detention Facility and Satellite Facilities

This alternative could be implemented in different ways, each of which would result in an integrated countywide detention system. The two main (representative) possibilities for developing such a system are: a detention system consisting of a single main facility and satellite facilities in other areas of the county, and a system with a single main pretrial facility and other specialized facilities (such as post-trial incarceration, work-furlough, temporary holding, etc.) at other locations. An evaluation of these two main options follows.

The first case, the development of satellite facilities, relates to the desire of some of the county's cities to close their detention facilities, and in part provides a means of increasing the County's detention capacities. The primary reason some of the cities still maintain such facilities (see Chapter 23) is that they find it too costly and time consuming to deliver each arrested person directly to the county jail in Martinez. In contrast, for example, the cities of Martinez and Pleasant Hill are located nearest the County Jail and have no city jails, but instead they transport each arrested person directly to the County Jail. It has been indicated that if branch County detention facilities were provided in major sub-areas of the county, many of the other cities might also choose to close their facilities and deliver arrested persons directly to these local county facilities. The actual evolution of such a satellite system would require city-county cooperation, joint planning, and changes in criminal justice facilities funding.

In idealized form, this variant would involve the construction of a single main detention facility and several smaller branch facilities in other county areas. If the main facility were located in Martinez, sub-county facilities might be provided in such areas as west county, east county, and the San Ramon Valley. These facilities would serve primarily as temporary holding facilities, and also could provide more long term detention for some persons (e.g. those charged with misdemeanors who must be tried in the local Municipal Court).

It is thought that such a system would improve access to detention and booking facilities and reduce arrestee transportation obligations for the Sheriff's patrol and city police. Visiting inmates would be more convenient during the period persons were detained in facilities near their homes. The main disadvantages of such a system would be the costs of initial implementation and continued operation by the County. Although the operation of such a system might be more economical than the present combination of city and County facilities, because of increasing costs and higher operating standards it would be more costly in an absolute sense for the County to assume its total costs. However, conversion of some city jail facilities into County branch facilities might hold down the cost of instituting such a system, and a method of city-county cost sharing might be developed to equalize the financial burden.

The second case contemplates the development of a countywide detention facility system consisting of a single main pre-trial facility and other specialized facilities located throughout the county. Possibilities for special facilities include a facility devoted solely to high security post-trial detention, additional work-furlough centers, drug or alcoholism facilities, and temporary holding facilities similar to those covered above.

This alternative is not a substitute for the Detention Facility project, but, rather, is compatible with it (see below).

CONCLUSION: BASIC ALTERNATIVES

The direction given by the Board of Supervisors on September 28, 1976, to proceed with the design of a Detention Facility project in the County Civic Center is essentially a combination of Alternative 6b: Build a Redesigned Facility on a New Site within the Civic Center and Alternative 6d: Build a Low or Moderate Height Structure. How this policy direction was translated into design alternatives is the subject of the next part of this chapter.

This policy direction could be changed if subsequent information indicates that the proposal is undesirable or infeasible.

It should be noted that the carrying out of Alternatives 6b/6d does not preclude the future implementation to varying degrees of certain other alternatives. The study and implementation of alternatives to incarceration (Alternative 2) certainly will proceed, although its effects on future facility needs are unknown. The project is generally compatible with the options discussed in Alternative 8: Build More than One Detention Facility. This is the case because the project will reach design capacity during the 1985-2000 period (see Chapter 5), and the County will need to consider additional facilities and the role of the Detention Facility in an overall criminal justice facilities system.

MAJOR "FOOTPRINT" ALTERNATIVES

Introduction

On September 28, 1976, the County Board of Supervisors tentatively approved plans to locate a single detention facility having a capacity of 370-383 beds in the County Civic Center in Martinez. Prior Board directions called for adherence to recognized national guidelines regarding detention facility design. Additionally, concern over the project's impacts upon surrounding neighborhoods dictated a low to moderate height facility. Thus, at this point, the "Basic Alternative" decision had been made. This situation gave rise to a number of potential alternatives which satisfied the criteria that had been established. This new set of alternatives was defined by the project architect, Kaplan and McLaughlin.

Kaplan and McLaughlin began developing plans regarding the facility's location within the Civic Center, and its approximate size and shape. In consultation with the Detention Facility Advisory Committee, County staff, and Facility Sciences Corporation, and after visiting new facilities in other areas of the country, the architect produced five alternative "footprint" designs for consideration (see Figures 1-5). The five "footprints", which utilized four different Civic Center sites, were essentially two-dimensional layouts depicting approximate building position, configuration, and land coverage.

In developing the alternative "footprints", Kaplan and McLaughlin was guided by FSC's recommendations that two to four courtrooms be provided in conjunction with the facility. FSC estimated that the total gross floor area required for detention and courts was approximately 175,000-180,000 square feet, and that 268 parking places would be needed. Given these needs, Kaplan and McLaughlin determined that the minimum site requirement for the project was approximately 5 acres. The four alternative Civic Center sites selected for the five footprints were located south of Ward Street, the northern portion being already intensively developed. Thus the area available for project siting was bounded by Ward, Willow, Mellus and Court Streets.

The following is a brief presentation of the five "footprint" alternatives, which includes a discussion of their advantages and disadvantages and an explanation of why each was rejected or selected. A more thorough discussion of parking and traffic considerations is included in Chapter 16; noise and air quality concerns are explored in greater depth in Chapters 17 and 13.

ALTERNATIVES A AND B

Alternatives A and B (Figures 1 and 2) are discussed together because they both use a site which is bounded by Ward, Willow, Mellus, and Pine Streets. In both alternatives, the facility structure is situated in the northern portion of the site (north of Thompson Street). The major difference between the two alternatives is the use of different building configurations.

The site contains 5.3 acres, and is thus large enough to satisfy the Detention Facility building's needs. Both Alternatives A and B are contiguous to existing Civic Center development, making access to other County agencies quite convenient. Perhaps the major concerns about Alternatives A and B are their proximity to residences on the eastern side of the Civic Center and location on a higher elevation in the Civic Center. Of the five alternatives, A and B would have the greatest visual impacts upon east side residences and would provide the least buffering between the facility and the residential area.

The use of Alternative A or B would minimize street closures within the Civic Center. It would necessitate the closure of Green and Thompson streets between Pine and Willow. Kaplan and McLaughlin found that of the four alternatives, Site 1 results in the least disruption of existing traffic flow and operation.¹⁴

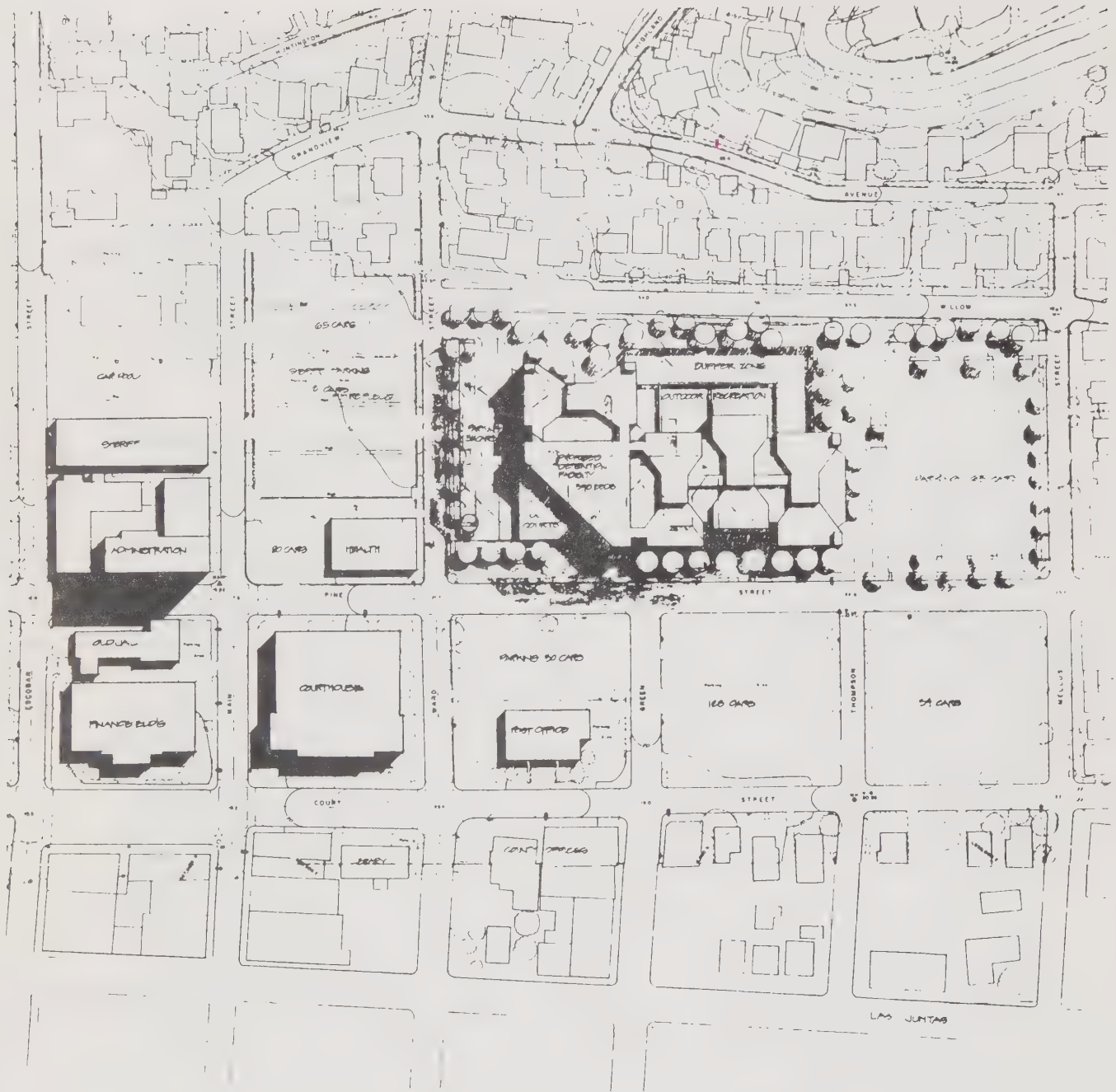
An analysis of the traffic and parking impacts for the five alternatives was made by JHK and Associates (Chapter 16). They found that Alternatives A and B would have little effect on circulation and access in the Civic Center, and that vehicle miles of travel does not vary significantly between project alternatives. With respect to parking, the five alternatives would have major impacts upon the parking supply in the Civic Center area. Overall, only Alternatives A, B and C were found to provide major relief to existing parking deficiencies, with Alternative B being the most beneficial of the three, and A the least favorable. With respect to congestion and delay, Alternatives A and B were found to generate the fewest problems, and were judged to have essentially the same impact as the no project alternative. In general, the findings of JHK and Associates indicate that Alternatives A and B would have the least impact of the five alternatives upon parking and traffic.

Noise and Air Quality Impacts of the five alternatives were evaluated by Earth Metrics Incorporated (see Chapters 17 and 13). They found that noise levels resulting from Alternatives A and B would be indistinguishable from those of the no project alternative, and would be only slightly increased over existing levels. In examining air quality impacts, Alternatives A and B were found to be indistinguishable from the "no project" alternative with respect to carbon monoxide, and generally result in lower daily emissions of other vehicle pollutants than the other alternatives.

Alternatives A and B were rejected primarily because of concern about their impact upon the neighboring hillside residential area. Local residents expressed opposition to these alternatives at public meetings and other forums.

¹⁴ Kaplan and McLaughlin, "Contra Costa Detention Facility Site Selection and Development Study", November 24, 1976, p. III-14.

Figure 1



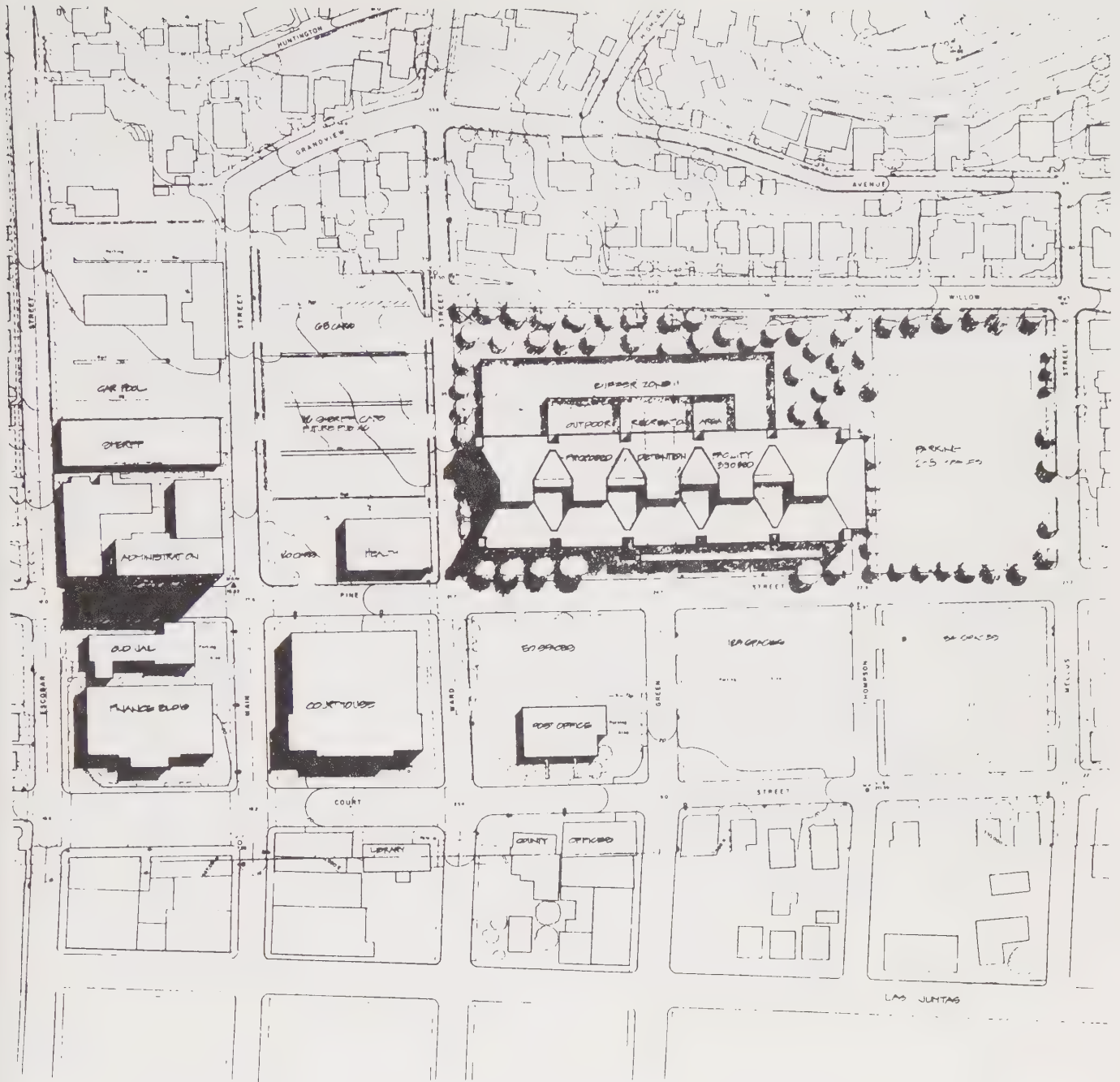
CAR - f 3 w 4

W 786	183	TOL CANOE	W
TO CTR A - BE.	303	TOL 2-1	
BE VALD	18	303 - 1-1	ETS
		TOL W L N	
N 786	32	303 - 1-1	W
BE WIDE	40	303 - 1-1	W

A. Berggren

Contra Costa County Detention Facility Civic Center Site Studies

Figure 2



PARKING SUMMARY

OFF CAMPUS LOT	283	TOTAL AVAL H	
RESIDENTS ALICE	342	SHOREVIEW PARK (15)	477
WET CAMPUS	117	283 TOTAL	76
IN CROSS LOT	37		
WET CAMPUS	31		
TOTAL CAMPUS	149		
TOTAL AVAL H			
SHOREVIEW PARK (15)			

Alternative 1: Compartment 15

Contra Costa County Detention Facility Civic Center Site Studies

ALTERNATIVE C

Alternative C utilizes a site which is bounded by Ward, Pine, Mellus, and Court Streets. It would require few street closings. Because of its location across Ward Street from the courthouse, Alternative C provides convenient access to Courts and related County Civic Center functions. This alternative would have the most spatial separation from the hillside neighborhood, but it is poorly buffered from residential and other uses along Court and Mellus Streets.

Because of the long and narrow nature of the site, only a long wall-like building is possible. Also, the facility would be very close to Pine and Court Streets, with only inadequate setbacks possible, thus making it very prominent and highly visible on the southern and western sides of the Civic Center. The site is so small that it does not provide space for courts expansion. This is a concern because of the desire to add additional courts at a later date. It also requires the removal of the Post Office. This would result in some delay because postal authorities have said that it would take one to one and one-half years for the County to acquire this federal property.¹⁵

This alternative requires the closure of Green and Thompson Streets between Court and Pine, and Alternative C also calls for the closure of Thompson between Pine and Willow. Resulting impacts upon circulation and access are greater than for Alternatives A and B, but less than for Alternatives D and E. Alternative C could provide major relief to the existing parking deficiency, by adding about 100 parking spaces in addition to those required to satisfy increased needs resulting from the project. Alternative C will affect traffic congestion and delay by shifting more traffic to Ward Street, and causing heavy vehicle and pedestrian traffic at the intersection of Ward and Pine.

Noise and air quality impacts resulting from Alternative C are somewhat greater than those of Alternatives A and B. Noise levels along Pine and Ward Streets in the vicinity of the project will be increased. Air pollution levels will be increased in the same areas, and emissions will be somewhat higher than those resulting from either Alternatives A and B or the no project alternative.

Alternative C was rejected because the site is too narrow to accomodate a suitable site for the kind of detention facility building that is being planned and to provide the setbacks from streets desirable for such a facility.¹⁶

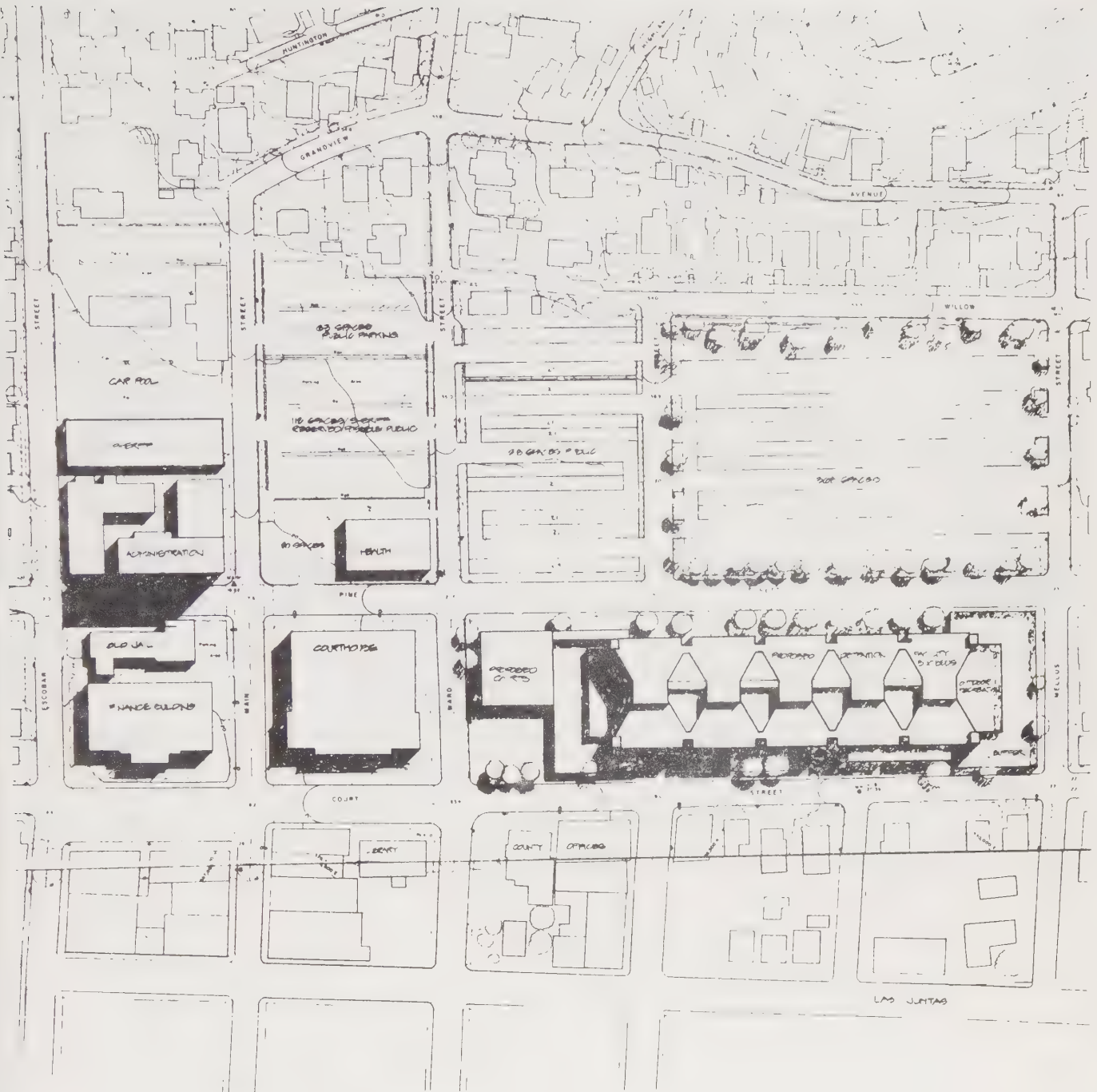
ALTERNATIVE D

Alternative D utilizes a 5.3 acre site bounded by Green, Willow, Ward and Court Streets, (see Figures 3 and 4). Pine Street is closed between Green and Mellus and diverted to Court Street and Thompson Street is closed between Court and Willow. This alternative provides the poorest access to other Civic Center

¹⁵ Kaplan and McLaughlin, Ibid, p. III-9.

¹⁶ Kaplan and McLaughlin, Ibid, p. III-22.

Figure 3

[illegible]

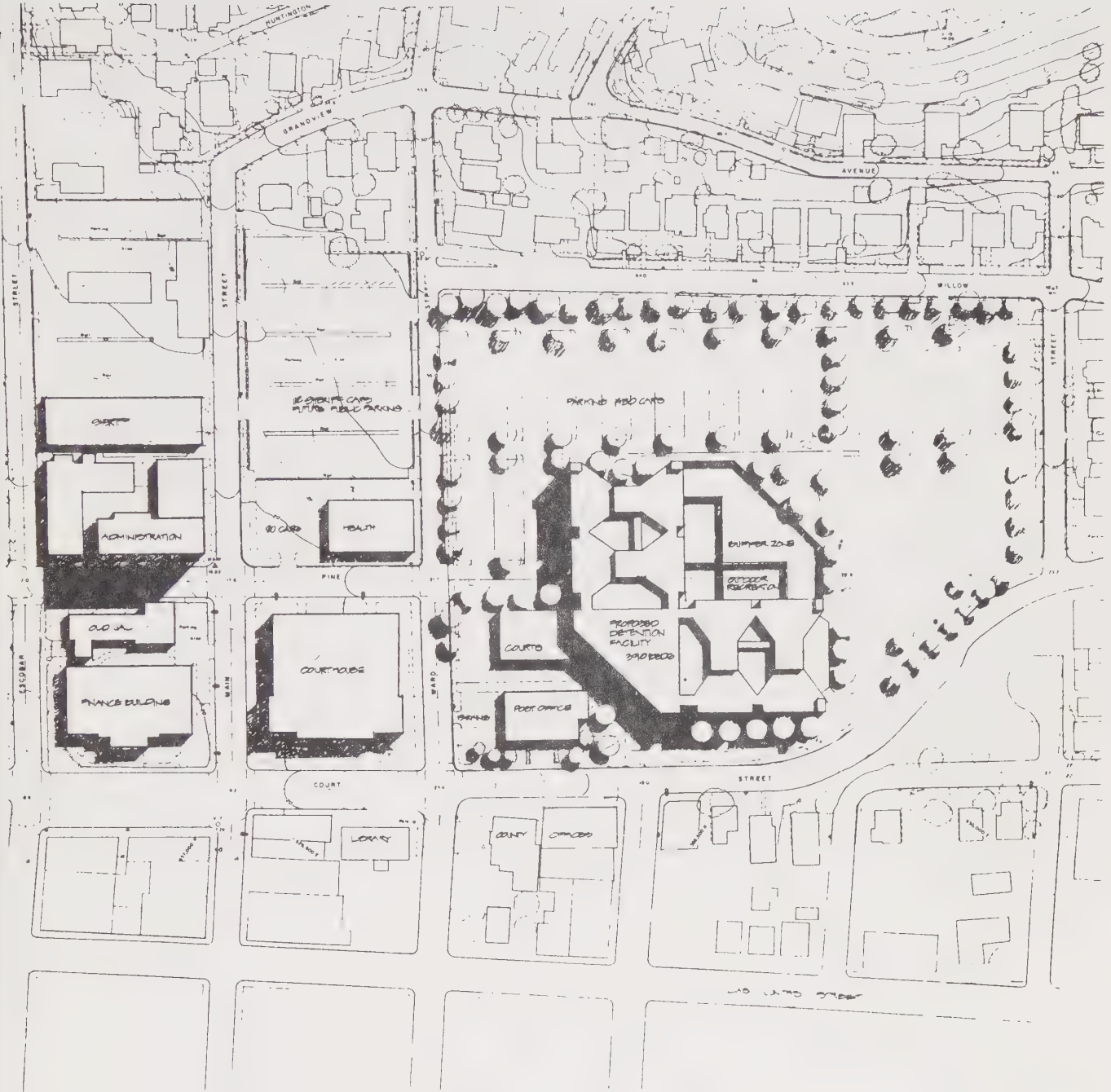
[illegible]

APR 13 9 11 AM '78

ONE STREET LOT	33%	TOTAL MATH 44	
ONE STREET ACCESS	470	STREET 16 PERMANENT	220
NET CHANGE	-10		
		TOTAL MATH 44	
ONE STREET LOT	8	STREET 16 PERMANENT (C)	220
ONE STREET ACCESS	80		
NET CHANGE	-51	CAR FEE	22
TOTAL ST. FEE	-10		

Contra Costa County Detention Facility Civic Center Site Study

Figure 5



APPENDIX SUMMARY:

[illegible]

အိန္ဒိယနိုင်ငံ၊ အိန္ဒိယနိုင်ငံ

Contra Costa County Detention Facility Civic Center Site Studies

functions because it leaves an entire street block between the existing built-up area and the new facility. The facility is well buffered from residential areas to the east and south, and to a lesser extent from those to the west. Thus concerns about impacts upon surrounding residences are minimized.

This alternative requires significant utility relocation. Although the closure of the east-west streets require minor utility relocations, costs and difficulty of relocation are not major.¹⁷ However, Pine Street contains a number of main utility trunk lines, including sanitary sewers, water and gas mains, and electric power and telephone mains. Since Alternative D calls for the location of the facility directly in the current path of Pine Street, major utility work would be required, either through the bridging of the utilities by the facility, relocating them, or a combination of the two.

This Alternative has greater traffic and parking impacts than Alternatives A, B and C (Chapter 16). The diversion of Pine Street into Court Street, which makes Court the major north-south thoroughfare through the Civic Center area, has a major impact upon circulation and access in the Civic Center area. Existing parking deficiencies would be alleviated only slightly by Alternative D, which would provide only about 30 parking spaces more than the number required to meet the increased demand resulting from the project. Congestion and delay would be greatest along Court Street, particularly at its intersection with Green, but this is not expected to be a major problem.

Alternative D causes a shift in noise and air pollution patterns because of the diversion of Pine Street. The major noise impact of the diversion would be an increase in noise levels on Court Street, particularly for several residences between Ward and Mellus Streets. Vehicle exhaust emission patterns would also shift, so that pollution concentrations would also be greatest along Court Street.

Alternative D was studied along with Alternative E. following the Board of Supervisors' direction on November 9, 1976 (Chapter 3). But, it was superseded by a design closer to Alternative E because the latter provided a more flexible site and better proximity to existing and proposed court structures.

ALTERNATIVE E

Alternative E utilizes the entire southern portion of the Civic Center as its project site. The site is a 7.8 acre area bounded by Ward, Willow, Mellus and Court Streets. This alternative requires the closure of Green and Thompson Streets between Court and Willow, and the closure of Pine between Ward and Mellus. Pine Street is diverted into Court Street at the southeastern corner of the Civic Center. This Alternative provides the largest gross site area and the most flexibility for locating the building and site features; and it has adequate expansion potential for future courts and convenient access to existing Civic Center facilities. Impacts upon surrounding residential areas are minimized by location of the facility away from residences to the east and south.

¹⁷ Kaplan and McLaughlin, Ibid., p. III-19.

This alternative has the greatest impact upon local parking and traffic conditions. Circulation and access are affected by the closure of two east-west streets and by the diversion of Pine Street into Court Street. The major access route is shifted from the middle of the building complex (Pine Street) to its western edge (Court Street). This alternative provides the fewest number of parking spaces of the five alternatives. It provides a net gain of about 15 spaces beyond those needed to supply the increment of additional demand generated by the project. Alternative E also embodies the most congestion and delay potential of the five alternatives. The intersection of Court and Ward Streets will experience the largest vehicular volume, along with substantial pedestrian traffic, resulting in the potential for substantial congestion at periods of heavy use. In addition, there will be congestion and delay at the parking lot exits under this alternative. However, as Chapter 16 notes, these impacts are manageable with conventional traffic control practices and installations.

Noise and air quality patterns for Alternative E parallel those of Alternative D. Concentrations of noise and vehicle exhaust emissions will be focussed upon Court Street. Vehicle emissions will be somewhat greater for this alternative, which results in slightly higher pollutant levels than the other alternatives.

Of the five alternatives, Alternative E was selected by the County. In accepting the design approval inherent in Alternative E, the participants, including community groups, staff, and the DFAC, recognized that it would have the most physical impacts of the several "foot-print" alternatives (except the similar Alternative D) because it would require the most physical changes to the project site, necessitate more site preparation activity, and result in more changes to established traffic patterns. Despite these physical impacts, Alternative E was selected because it offered the best combination of opportunities to accommodate the kind of building design that studies indicated would accomplish the project's criminal justice objectives, to locate the structure where it would minimize impacts to most adjoining land uses, to locate the structure where it could relate well to other County buildings and functions, and to provide a site that was amenable to an integrated site design providing landscaping, parking, and buffering.

CONCLUSION: FOOTPRINT ALTERNATIVES

In order to decide which of the five "Footprint Alternatives" would be best suited for the detention facility project, each was reviewed by the Detention Facility Advisory Committee (DFAC) and by the project architect, Kaplan and McLaughlin. In addition, residents of the Civic Center area were invited to a public meeting of DFAC's Site Selection and Architectural Design Standards Subcommittee at which staff of Kaplan and McLaughlin presented the five alternatives. When asked to state their preferences regarding siting, those present at the meeting expressed a unanimous preference for location of the facility to the west of Pine Street; of the five alternatives they favored Alternative D, with Alternatives E and C also receiving support.

After completing its review of the "Footprint Alternatives", the Detention Facility Advisory Committee recommended that the detention facility be con-

structed in accordance with Alternative E.¹⁸ This recommendation received concurrence from Kaplan and McLaughlin, who also recommended Alternative E.¹⁹ The Board of Supervisors agreed with these recommendations. Preliminary drawings of a Detention Facility proposal based on this alternative were presented to the Board of Supervisors on December 21, 1976, and schematic drawings were tentatively approved by the Board on February 1, 1977.

¹⁸ Detention Facility Advisory Committee of Contra Costa County, California, Minutes of the Committees' November 1, 1976 Meeting.

¹⁹ Kaplan and McLaughlin, Ibid., p. III-4.

Chapter 7

GEOLOGY

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Woodward-Clyde Consultants
Consulting Engineers, Geologists and Environmental Scientists
San Francisco, California
February, 1977

TABLE OF CONTENTS

Introduction	7-1
Regional Geologic and Seismic Setting	7-1
Regional Faults	7-2
The San Andreas Fault	7-2
The Hayward Fault	7-2
The Calaveras Fault	7-2
The Concord Fault	7-4
The Green Valley Fault	7-4
Significant Historic Earthquakes	7-5
1838 and 1906 - San Andreas Fault	7-5
1836 and 1868 - Hayward Fault	7-6
1861 - Calaveras Fault	7-7
1892 - Vacaville	7-7
1898 - Mare Island	7-8
1955 - Concord	7-8
Geologic and Seismic Setting of Martinez	7-8
Structural Geologic Setting	7-8
Franklin Fault	7-8
Southampton Fault	7-10
Muir Fault	7-10
Concord Fault	7-10
Concealed Bedrock Fault	7-12
Local Seismicity	7-12
Geologic and Soil Conditions - Project Site	7-14
Alluvial Deposits	7-14
Bedrock	7-14
Ground water	7-14

Potential Impacts and Mitigating Measures	7-18
Strong Ground Shaking	7-18
Instability of Excavations Below Shallow Ground Water Level	7-21
Differential Settlement	7-22
Irregular Bedrock Surface	7-22
Other Considerations	7-23
References	7-24

TABLES

Table I - Existing Conditions, Potential Impacts, and Mitigating Measures	7-19
Table II - Maximum Credible and Maximum Probable Earthquakes	7-20

FIGURES

Figure 1 - Regional Seismicity - 1969-1973	7-3
Figure 2 - Geologic Structure Vicinity of Martinez California	7-9
Figure 3 - Local Geology	7-11
Figure 4 - Conditions Reported in Vicinity of Concealed Fault	7-13
Figure 5 - Distribution of Silty Soils	7-15
Figure 6 - Bedrock Contour Map	7-16
Figure 7 - Ground Water Surface	7-17

GEOLOGIC BACKGROUND REPORT FOR DRAFT EIR
CONTRA COSTA COUNTY DETENTION FACILITY
Martinez, California

INTRODUCTION

It is our understanding that the proposed Contra Costa County Detention Facility is to be located within a six-square-block area (hereafter referred to as project site) bounded by Court Street, Ward Street, Willow Street, and Mellus Street in Martinez, California. As contemplated, the Detention Facility is to be a three- to four-story reinforced structure with a spread footing foundation. Since the ground surface of the project site has a gentle slope to the west (elevation ranges from 20 to 40 feet above sea level), some minor grading is anticipated. The grading will probably consist of cuts and fills of five feet or less.

The data presented in this geologic background report are for use in the Draft Environmental Impact Report for the proposed Contra Costa County Detention Facility. These data are based upon a review of available geologic maps and reports, borehole logs provided by the Contra Costa County Planning Department, and old topographic maps; and on an examination of existing aerial photographs. The data sources used are listed in the references. This report incorporates the results of a preliminary fault study for the proposed Detention Facility (Woodward-Clyde Consultants, 1976c).

This report first discusses the regional geologic and seismic setting, followed by geologic and seismic setting of Martinez, geologic and soil conditions - project site, and potential impacts and mitigating measures.

REGIONAL GEOLOGIC AND SEISMIC SETTING

The proposed project site, Martinez, and the rest of the San Francisco Bay Area are located within an active seismic region. The San Francisco Bay Area has been the location of strong earthquakes in the past and the same level of activity is expected to continue in the future. The following two sections describe the regional faults, followed by a discussion of significant historical earthquakes affecting the Martinez area.

Regional Faults

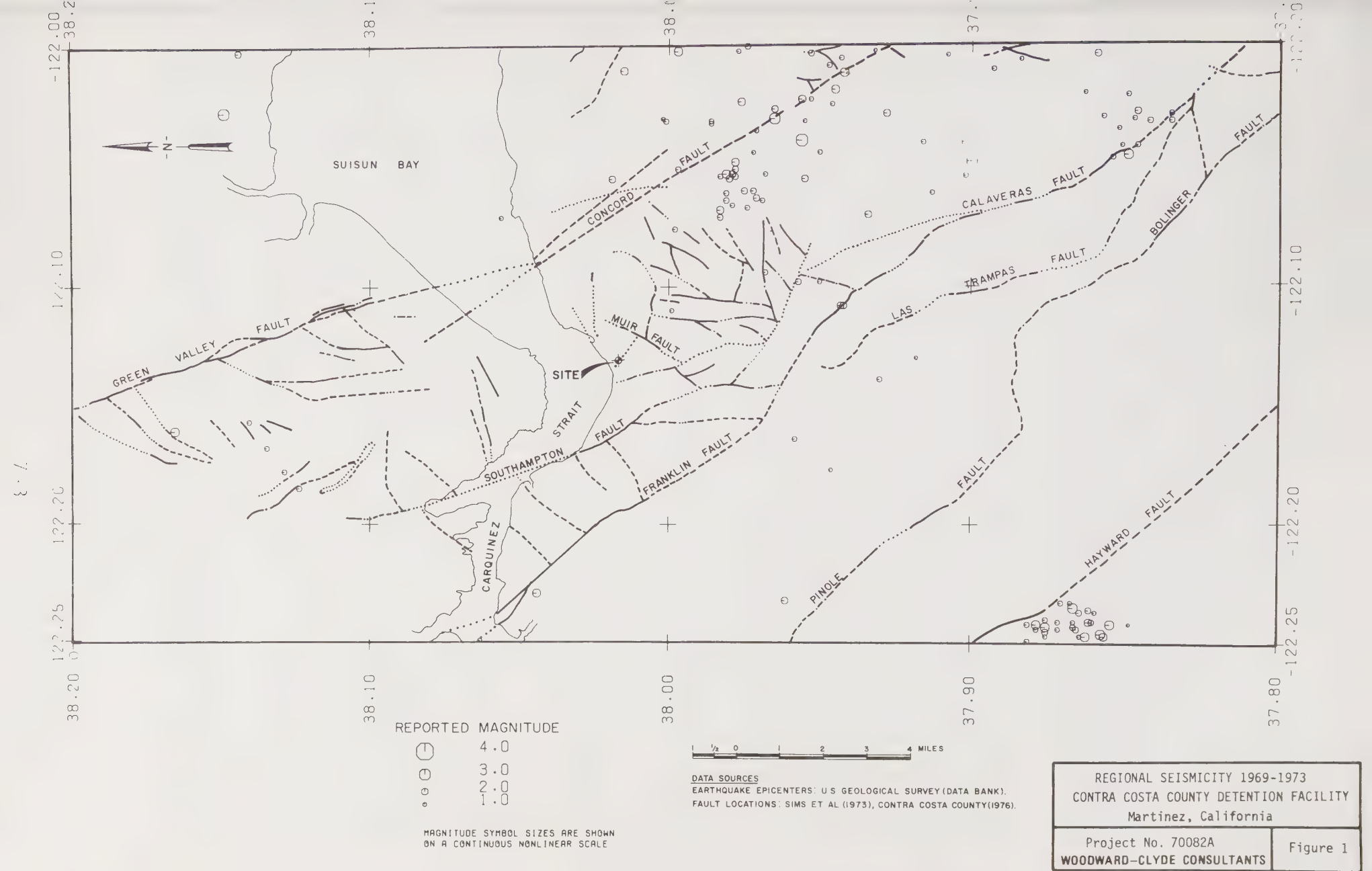
There are five regional faults known to be active, which have the potential for generating strong earthquakes which could affect the Martinez area. These are: the San Andreas, located 30 miles to the west; the Hayward, located 11 miles to the west; the Calaveras, located 18 miles to the south; the Concord, located 3 miles to the east; and, the Green Valley, located 6 miles to the northeast. With the exception of the San Andreas, these faults are shown on Figure 1. All five of the faults and their earthquake histories are discussed below.

The San Andreas Fault - The San Andreas fault is a part of the San Andreas fault system, which is the predominant active fault system in California, and is one of the largest and most active fault systems in the world. Surface rupture occurred on the segment of the San Andreas fault located about 30 miles west of the project site during major earthquakes in 1838 and 1906. The San Andreas fault system has two important branches in the San Francisco Bay Area: the Calaveras fault, and the Hayward fault; each of which will be discussed separately.

The Hayward Fault - The Hayward fault has also been the source of strong, destructive earthquakes during historical time. It passes approximately 11 miles to the west of the site (Figure 1). The Hayward fault apparently branches off the Calaveras fault somewhere east of San Jose, and extends northward along the base of the Berkeley Hills, entering San Pablo Bay north of Richmond, California.

The Calaveras Fault - The Calaveras fault branches from the San Andreas fault south of Hollister, and its known active portion extends to the vicinity of San Ramon (south of Walnut Creek) approximately 18 miles south of the project site. The location of the northern extension of the Calaveras fault (Figure 1) is not well documented.

Louderback (1937) and Brown and Lee (1971), on the basis of earthquake epicenter plots, have postulated that the Calaveras fault continues directly northward from Walnut Creek to join the Green Valley fault. However, the inaccuracies inherent in routine epicenter plots are such as to make the validity of that hypothesis debatable. The observable scattering of earthquake epicenters in northern Contra Costa County could equally well be taken as evidence that the Calaveras fault zone actually splits up into a series of minor, less active faults. The latter view can be tentatively supported by evidence presented by Bolt and others (1968) that multiple



active faults of limited extent are present to the north of San Pablo and Suisun Bays. Geologic mapping by Tolman (1931) suggests that the northern extension of the Calaveras fault is the Southampton fault (Figure 1). That interpretation is supported by Poland (1935) and by more recent field work done by Saul (1967). Saul, working in the Walnut Creek area, suggested that the northern extension of the Calaveras fault zone encompasses both the Franklin and Southampton faults (Figure 1). While the Calaveras fault is considered to stop south of Walnut Creek, the activity may be expressed on other faults such as the Concord and the Green Valley.

The Concord Fault - Poland (1935) reports that the Concord fault, located 3 miles to the east (see Figure 1) was first discovered in 1919 during a lawsuit concerning the purported effect of the removal of large quantities of water in the Ygnacio Valley. The results of pumping tests ordered by the court showed that a fault traversed the town of Concord, forming a groundwater barrier between aquifers in Clayton Valley and those of Ygnacio Valley. Poland (1935) states that the barrier was created by fault displacements that sealed gravel channels against impervious clays, and that the groundwater barrier extends within a few feet of the surface. He further states that the surface expression of the fault is shown by an irregular fault-line scarp along the west side of Lime Ridge and by the presence of an elongated lagoonal depression formerly known as Galindo Lake. That lake has long since disappeared due to a general lowering of the water table.

Poland (1935) indicates that the northward extension of the Concord fault passes through Suisun Bay and continues to Sulphur Mountain, where it is known as the Sulphur Mountain fault. That same extension is shown by Tolman (1931) who labeled the latter fault the Sulphur Springs Mountain fault, and by Weaver (1949), who called it the Sulphur Springs Valley thrust fault.

The Concord fault has most recently been studied by Sharp (1973), of the U. S. Geological Survey. Sharp's report cites evidence suggesting recent right slip due to fault creep, which indicates that the Concord fault should be considered active. Sharp states that the evidence suggests that the rate of creep has not been constant, and that a period of accelerated creep might have been triggered by a relatively strong earthquake in October, 1955.

The Green Valley Fault - The Green Valley fault is located in Solano County, approximately 6 miles northeast of the site (Figure 1). The fault is a high-angle normal fault with the

east side downthrown relative to the west side (Weaver, 1949). Weaver states that the vertical displacement on the fault throughout geologic time has not exceeded 500 feet. Brown (1970), in a map showing historically active faults with geologically young displacements, indicates that the Green Valley fault may have a "probable surface break, defined by topographic lineament". This assessment is confirmed by Dooley (1971), who cites "apparent" deviated stream channels, scarps in Holocene alluvium, and a displaced fence line as evidence of activity. While the fault is classified as potentially active, it should be considered active.

Significant Historical Earthquakes

The Martinez area and the project site have been subjected to a number of strong earthquakes during historic time. A paper by Harding (1929) states that the district contiguous to Martinez experienced earthquakes classed as severe, heavy, or destructive during the years 1860, 1864, 1865, 1868, 1883, 1888, 1889, 1890, 1891, 1892, 1893, 1895, 1896, 1898, 1902, 1903, 1906, 1919, 1920, and 1924. This list is probably not complete, even for the period covered since Contra Costa County (1975) reports that strong earthquakes also occurred in 1861, 1866, 1872, and 1901. Descriptions of most of these seismic events may be found in Holden (1898) and/or in Townley and Allen (1939).

Perhaps the most significant of the earthquakes which have been felt in the Martinez area were those which were generated in the following areas: 1) the San Andreas fault in 1838 and 1906; 2) the Hayward fault in 1836 and 1868; 3) the Calaveras fault in 1861; 4) Vacaville-Winters-Dixon in 1892; 5) Mare Island in 1898; and 6) Concord in 1955. These seismic events are described below.

1838 and 1906 - San Andreas Fault - One of the earliest documented earthquakes on the San Andreas fault felt throughout the San Francisco Bay Area occurred in June, 1838. Tocher (1959) described this earthquake as one of the five largest shocks in the area, being comparable with the earthquake of April 18, 1906. The 1906 earthquake was the most significant earthquake in the San Francisco Bay Area and one of the strongest shocks known in California. The epicenter of this event was on the San Andreas fault in Marin County, about 30 miles west of the site. The effects of that earthquake were severe in Martinez. The following description was taken from Lawson (1908) to whom it was provided by F. E. Mathes:

"Most of the brick buildings here suffered severely; nearly all are more or less cracked, and the stone facing of several buildings was partly demolished. The roofs of the bank and other buildings were wrecked. Many window panes were broken off. The courthouse was little injured... The railroad track east of Martinez, near Bull's Head Oil Works, was thrown 3 inches out of alignment."

The following account was reported to Lawson (1908) by W. Stoddard.

"Buildings were loosened in general, the fronts of some falling out. The north and south walls seemed to suffer most. The southern part of town was damaged more than the northern part. The level of underground water rose after the shock."

The Contra Costa Gazette of April 21, 1906 reported the following:

"For nearly a minute yesterday, Martinez was in the terrifying grasp of the worst earthquake ever experienced in this country, a mighty tremblor that tossed great buildings about, tore brick walls down and laid houses flat, wrought \$50,000 damages in this town... It was an awful moment and no one who experienced the irresistible power of the shaking earth or fearful roaring that accompanied will ever forget it to his dying day. The end of the world could have no more terrible prelude.

"Despite the fact that the handsome buildings which the people of Martinez courageously erected after the fire two years ago are practically ruined, the people of Martinez rejoice that not one life was lost... buildings shook as though they were about to come down, bricks and stone went hurtling through the air, huge tanks toppled over, and ravenous flames ate up a portion of Granger's Wharf."

The Modified Mercalli Intensity at Martinez was VII to VIII judging from the above descriptions.

1836 and 1868 - Hayward Fault - Major earthquakes occurred on the Hayward fault in 1836 and 1868. The epicenter of the 1868 earthquake was in the vicinity of the City of Hayward and in the Martinez area it is estimated to have been of Intensity IX on the Rossi-Forrel scale (Holden, 1898). Holden (1898) reported that the duration of the first shock was 42 seconds. Tocher (1959) cites this earthquake as one of the great shocks

in the Bay Area. The following account of the effects of the 1868 earthquake was reported in the October 24, 1879, issue of the Contra Costa Weekly Gazette:

"...so far as we have any record or tradition, the earthquake of Wednesday morning last, was altogether the most violent and alarming that has occurred here since this portion of our coast has been known to civilized men.

"The serious damage in (Martinez) is confined to the brick and concrete structures, though most of the frame buildings lost their chimneys above the roofs, and there was some overthrow and crash of glass and crockery ware in stores and dwellings."

Tolman (1931) reported that the 1868 earthquake "wrecked" the Martinez courthouse. No information is available regarding specific damage or earthquake effects in Martinez as a result of the 1836 earthquake.

1861 - Calaveras Fault - A strong earthquake occurred on the Calaveras fault in July, 1861 in the vicinity of Dublin. It had an estimated Intensity at the epicenter of IX on the Rossi-Forel scale and was felt as far away as Petaluma. The effects in the Martinez area are not documented in the literature.

1892 - Vacaville - Holden (1898) has described the April 19, 1892 earthquake that hit Vacaville, Winters and Dixon in fairly comprehensive detail. He assigns a Rossi-Forel Intensity VIII to the earthquake at Vacaville and states that "Vacaville seems to have been the headquarters for the quake." Holden reports that, in Martinez, this earthquake lasted for 35 seconds. The effects at that location were stated to be as follows: "a few cans toppled over in some of our stores, several clocks stopped, a few cracks occurred in the courthouse plastering, and several chimneys were shattered".

A second earthquake, of approximately the same magnitude as the April 19 event, struck approximately the same epicentral area on April 21, 1892. Holden (1898) stated that the vibrations were from northwest to southeast and lasted for 35 seconds. Holden (1898) also reported that: "Clocks were stopped in some parts of town, the vibrations seeming to be stronger in the level than on the slopes. The court house was cracked in one or two places, but not seriously. The brick building used by the free library was cracked so badly that it

is considered unsafe". Holden assigned a Rossi-Forel Intensity of VII to both the April 19 and the April 21, 1892 earthquakes.

1898 - Mare Island - The Townley-Allen catalog (Townley and Allen, 1939) reports the duration of this earthquake as being 40 seconds, and assigns it a Rossi-Forel Intensity of VIII. Wood and Heck (1961) report that it was felt as far away as Carson City, Nevada, and that it caused considerable damage in San Francisco.

1955 - Concord - The most recent earthquake to cause damage in the Martinez area was the Concord earthquake of October, 1955. The epicenter of this earthquake is plotted south of Buchanan Field, in the vicinity of the Concord fault. The earthquake had a Richter magnitude of 5.4 and it was felt over an area of 12,000 square miles.

The Coast and Geodetic Survey (Murphy and Cloud, 1957) assigned this earthquake an Intensity of VI in Martinez, and described the effects there as follows:

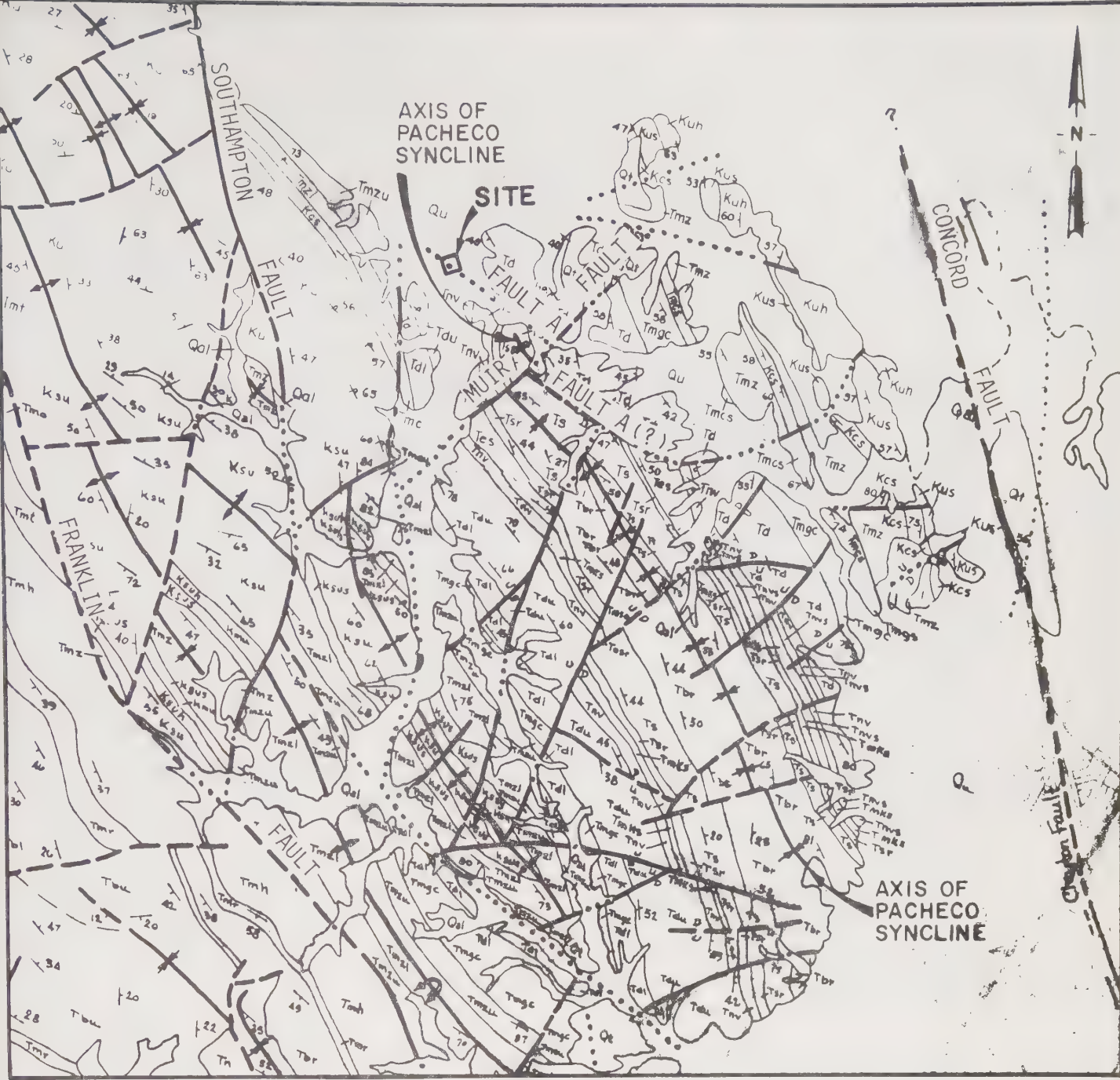
"Felt by and frightened all in community. Damage considerable to brick. Considerable damage to the girls' gymnasium in the Alhambra Union High School; a number of heavy 12 x 8 ceiling beams cracked. Building declared unsafe. Fireplace and chimney cracked; plaster cracked. Small objects overturned; knickknacks fell. Old clocks started."

GEOLOGIC AND SEISMIC SETTING OF MARTINEZ

Structural Geologic Setting

The geologic structure in the Martinez area, as shown on Figure 2, consists of a series of northwest-trending synclines and anticlines (with the Pacheco syncline being most pertinent to the project site), northwest-trending faults, and some northeast-trending faults. Four faults which are representative of the northwest- and northeast-trending faults in the Martinez area (and are most significant to the project site) are shown on Figure 2. These are the Franklin, Southhampton, Muir, and Concord faults. These faults are discussed below.

Franklin Fault - The Franklin fault is located approximately 3 miles southwest of the project site. Saul (1966) describes the Franklin fault as being the western branch of the northern



EXPLANATION

- FAULT
- AXIS OF SYNCLINE
- AXIS OF ANTICLINE
- AXIS OF OVERTURNED ANTICLINE
- GEOLOGIC CONTACT
- 20 STRIKE AND DIP OF BED
- 65 STRIKE AND DIP OF OVERTURNED BED



MODIFIED AFTER CONTRA COSTA CO.(1976)

GEOLOGIC STRUCTURE	
CONTRA COSTA COUNTY DETENTION FACILITY Martinez, California	
Project No. 70082A	Figure 2
WOODWARD-CLYDE CONSULTANTS	

extension of the Calaveras fault. Tolman (1931) indicates that the Franklin fault is active and suggests that it splits near Carguinez Strait, with one trace continuing northward on either side of Mare Island. If this inference is valid the Franklin fault may have been the source of the Mare Island earthquake of 1898. However, the Franklin fault is not considered active by the California Division of Mines and Geology, nor is it reported active by Contra Costa County (1976), Brown (1970), or Jennings (1975).

Southampton Fault - The Southampton fault is located approximately 1 mile west of the site, as shown on Figure 1. This fault was mapped by Tolman (1931) as an "active fault", and has been inferred by Tolman (1931), Poland (1935), and Saul (1966) as being a branch of the Calaveras fault. The southern segment of that latter fault, extending southward from the vicinity of San Ramon, considered to be one of the major active faults of the San Francisco Bay Region. However, unlike the Calaveras fault, the Southampton fault has not been clearly associated with any strong historic earthquakes; and it is not considered active by the California Division of Mines and Geology, or reported active by Contra Costa County (1975), Brown (1970), or Jennings (1975).

Muir Fault - As mapped by Weaver (1953) the Muir fault is a normal fault with the southeastern block faulted down relative to the northwest block. The Muir fault, located approximately 3/4 mile southeast of the site, (Figures 1, 2, and 3) was inadvertently classified as potentially active by the California Division of Mines and Geology on the basis of work by Sims and others (1973). Sims has indicated that there is no evidence of Quaternary activity and therefore, the potentially active classification will be deleted by the California Division of Mines and Geology.

Concord Fault - The Concord fault, which is located approximately 3 miles east of the site (Figure 2) is considered by some geologists to be a possible northern extension of the Calaveras fault. Evidence for its activity has been well documented by Poland (1935) and Sharp (1973). The Concord fault may have been the source of a 1955 earthquake which had a Richter magnitude of 5.4. The central portion of Martinez is shown on Figure 3 to be underlain by Quaternary alluvium which extends southward in a narrow valley. Other portions of the city extend onto the Cretaceous and younger sedimentary rocks which form the surrounding hillsides. The Quaternary alluvium extends well below the present sea level which strongly suggests that the narrow valley was deeply eroded during the "ice ages", when



EXPLANATION

Modified from Sims et al (1973)

Qbm	Bay mud
Qal	Alluvium
Qt	Terrace deposits
Tmb	Briones sandstone
Tms	Sobranite sandstone
Tos	San Ramon sandstone
Tms	Markley sandstone
Ten	Nortonville shale
Ted	Domengine sandstone (Tedu, upper unit; Tedl, lower unit)
Tpu	Unnamed Paleocene formation (Tpus, upper unit sandstone member)
Tpm	Martinez formation (Tpmu, upper unit; Tpm1, lower unit)
Kus	Unnamed Cretaceous sandstone
Kgus	Unnamed Cretaceous formation

	Geologic Contact
	Synclinal axis
	Fault: dashed where approximately located, dotted where concealed.

	Strike and dip of bed
	Strike and dip of overturned bed



LOCAL GEOLOGY
CONTRA COSTA COUNTY DETENTION FACILITY
Martinez, California

Project No. 70082A
WOODWARD-CLYDE CONSULTANTS

Figure 3

continental glaciation brought about a general lowering of sea level.

Concealed Bedrock Fault

A recent U. S. Geological Survey map compilation (Sims and others, 1973) shows a concealed (buried) bedrock fault along, or closely parallel to, the axis of the Pacheco syncline. As shown on Figures 2 and 3, this buried fault has a northwesterly trend beneath downtown Martinez and the project site. This fault interpretation is based upon the fact that the geologic contacts between the San Ramon Sandstone, Markley Sandstone and Nortonville shale strike toward the synclinal axis from the south, whereas these rock units are not mapped as being present on the northeastern side of the synclinal axis (see Figure 3). Sims (personal communication, 1976) has advised us that the dotted symbol used for this fault is intended to convey the fact that it is an inferred feature of the lowest reliability.

Cooper-Clark & Associates (1974) re-plotted the buried bedrock fault inferred by Sims and others (1973) at a larger scale, and found that the zone within which it might lie crossed the extreme southwestern edge of the project site, which is shown on Figure 4. Subsequently, a preliminary fault study of the concealed fault was conducted by Woodward-Clyde Consultants (1976) for the project site. That report concludes that there is no evidence that the concealed fault is active or potentially active, but that the fault is probably inactive, and that the fault does not represent a significant hazard or impact to the proposed facility.

Local Seismicity

An epicenter plot of recent earthquakes recorded by the U. S. Geological Survey seismograph network is presented on Figure 1. A total of 119 events, with magnitudes in the range of 0.60 to 3.13, were delineated. These epicenter locations were superimposed on a map of reported fault locations in the region surrounding the project. Based on this epicenter plot, the regional seismic activity appears to be principally centered around the Concord, Calaveras, Green Valley and Hayward faults. Scattered activity is also seen between the Concord and Calaveras faults southeast of the project area. No epicenters were plotted in or near the project site.



300 0 300 600 FEET

Contour interval 5 feet

CONDITIONS REPORTED IN VICINITY
OF CONCEALED FAULT
CONTRA COSTA COUNTY DETENTION FACILITY
Martinez, California

Project No. 70082A
WOODWARD-CLYDE CONSULTANTS

Figure 4

GEOLOGIC AND SOIL CONDITIONS - PROJECT SITE

Alluvial Deposits

The available geologic maps (Sims and others, 1973; Weaver, 1949; Contra Costa County, 1976) indicate that the project site is underlain by Quaternary alluvium (Figure 3). The available data (Woodward-Lundgren, 1971; Woodward-Clyde Consultants, 1976a and b) indicate that the soils consist of one to three feet of medium stiff clay topsoil and fill of rather high plasticity overlying very stiff brown clays of good bearing capacity down to 8 to 12 feet below grade.

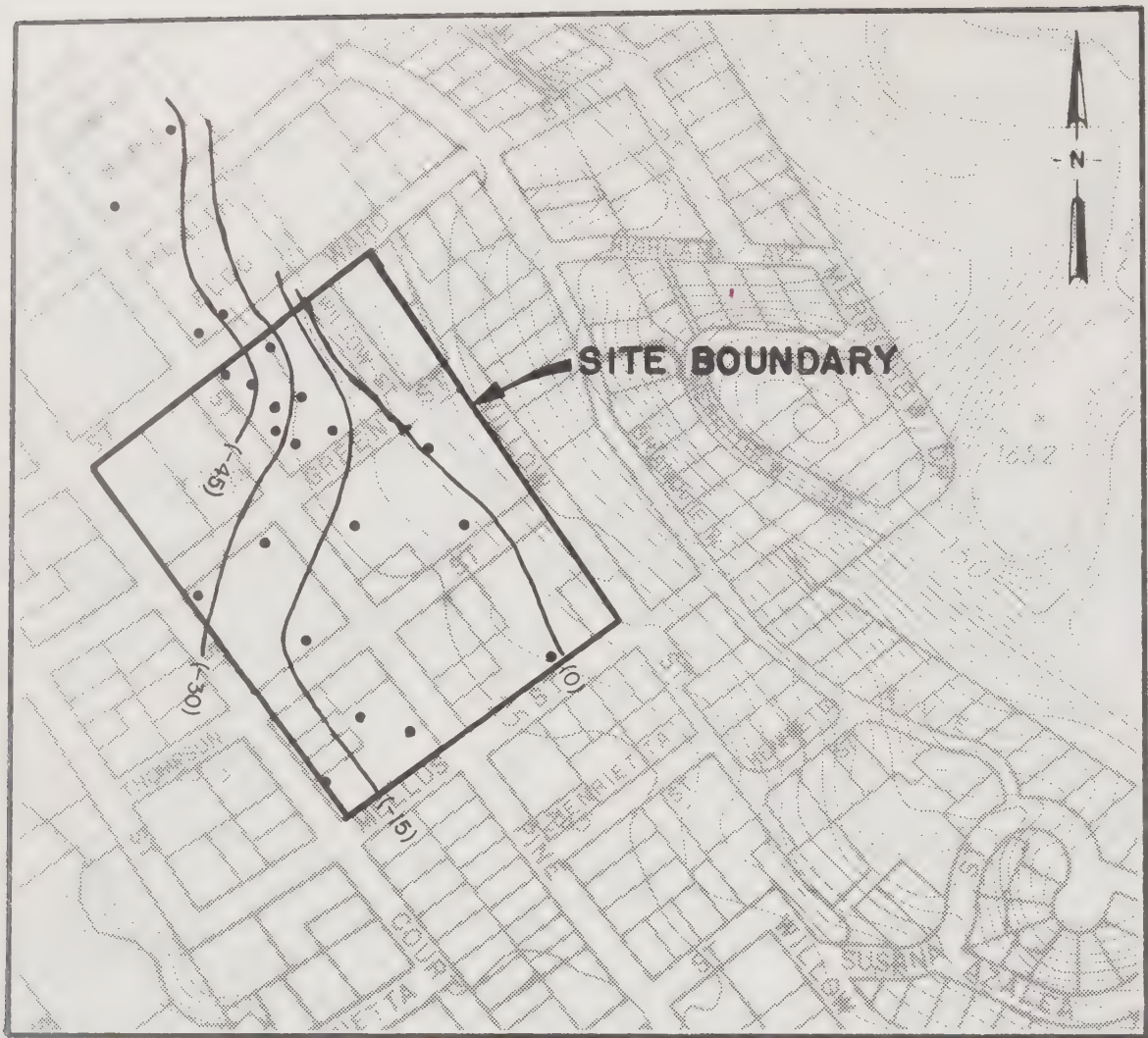
A stiff, tan, very silty clay was encountered at depths varying from 8 to 12 feet; this layer is from 5 to 7 feet thick, and is inferred to be moderately compressible under the foundation loads contemplated. The depth to the top of this layer is shown on Figure 5. Very stiff to hard sandy, gravelly clays are present below depths of 15 to 30 feet, and extend downward to bedrock.

Bedrock

The boring data indicate that an irregular bedrock surface is present at depths ranging from 16 feet to over 60 feet. This irregular bedrock surface can be visualized on Figure 6. As described on the boring logs (Woodward-Clyde Consultants, 1976a and b; Woodward-Lundgren, 1971) the bedrock consists of clayey sandstones and siltstones, clay shales, and claystones. The color is stated to vary from blue-gray to greenish brown or orange. Due to the proximity of surface exposures of rock mapped as Domengine sandstone, the bedrock has been assumed to belong to that geologic unit. Based on the same data, Cooper-Clark & Associates (1975) have suggested that the bedrock may belong to the Nortonville shale member of the Kreyenhagen Formation. This is not a significant difference since the Domengine sandstone is also a member of the Kreyenhagen Formation.

Ground Water

Ground water was encountered in the borings (Woodward-Clyde Consultants, 1976a and b; and Woodward-Lundgren, 1971) at depths ranging from 8 feet to 20 feet below the ground surface. In general, the greater depths to water were encountered beneath the upslope portion of the property. The depth of the ground water is shown on Figure 7.



EXPLANATION

- Borehole data location
- (-15)— Contour on bedrock surface

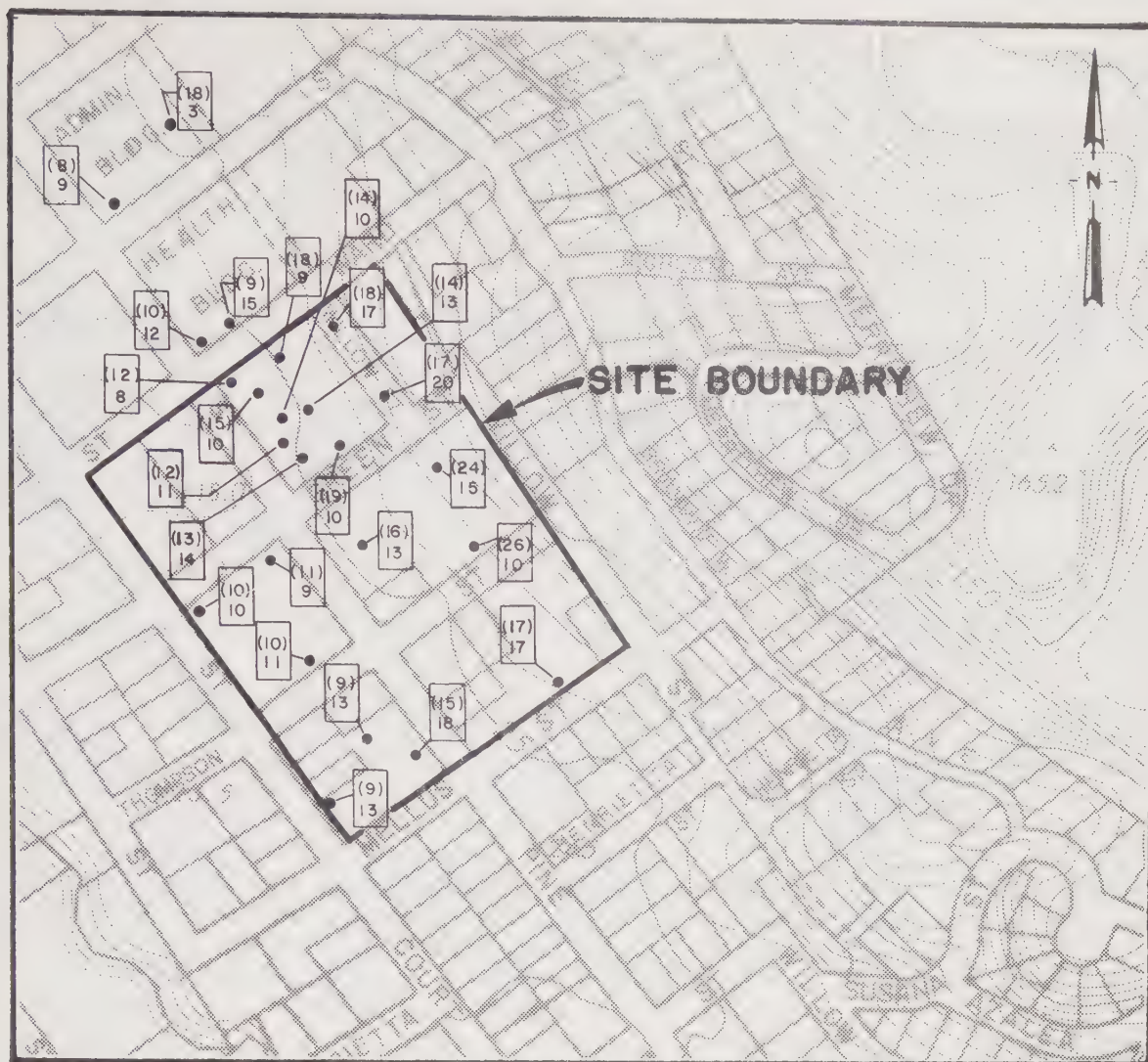
300 0 300 600 feet

BEDROCK CONTOUR MAP
CONTRA COSTA COUNTY DETENTION FACILITY

Martinez, California

Project No. 70082A
WOODWARD-CLYDE CONSULTANTS

Figure 6



EXPLANATION

- (18) Depth to water at time of drilling
- 12 Elevation on water at time of drilling
- Location of borehole from previous study

300 0 300 600 feet

GROUND WATER SURFACE
CONTRA COSTA COUNTY DETENTION FACILITY

Martinez, California

Project No. 70082A
WOODWARD-CLYDE CONSULTANTS

Figure 7

POTENTIAL IMPACTS AND MITIGATING MEASURES

The potential impacts to this project site and possible mitigating measures are described below and summarized in Table I.

Strong Ground Shaking

Moderate to strong earthquakes originating on the San Andreas, Hayward, Calaveras, Green Valley, Concord, and other regional faults have produced strong earthquake shaking and damage to structures in the Martinez area in historic time. Similar seismic events should be expected in the future. The magnitude of historical earthquakes and the projected maximum credible and maximum probable earthquakes for faults considered significant to this project, are given in Table II.

During a strong earthquake associated with the faults shown on Table II, the characteristics of the ground shaking will depend upon several variable factors: the magnitude and distance of the earthquake; the duration of shaking; and the characteristics of the relatively near-surface soil and rock. Experience has shown that the ground shaking to which a building is subjected depends largely on the ground response, or the reaction of the ground to the earthquake shaking. The soil conditions at the proposed site do not appear to warrant a site response study. The proposed structure should be designed with consideration of the historic seismicity and the maximum credible and maximum probable earthquakes as shown on Table II. As a minimum, the structure should be designed in accordance with Section 2312 of the 1976 Uniform Building Code. This Code includes an increase of the level of the design lateral forces; introduces a site-specific soils factor; considers the period of vibration of the building; considers the characteristic site period and the number of stories; and provides for an occupancy importance factor.

It is recommended that the structural engineer for the project, review this report and work with the soils engineer to further assess the need for a ground response study and to obtain any input needed for design in accordance with Section 2312 of the Uniform Building Code.

The Contra Costa County Seismic Safety Element states that structures whose use is critically needed after a disaster (hospitals, fire stations, police stations, and emergency communications facilities), should have a low level of acceptable-risk. In the Element it is estimated that the extra project cost probably required to reduce the earthquake risk to an acceptable level is on the order of 5 to 25%. The additional cost presumes that structures in this acceptable-

TABLE I

EXISTING CONDITIONS, POTENTIAL IMPACTS, AND MITIGATING MEASURES

<u>CONDITION</u>	<u>IMPACT</u>	<u>MITIGATION MEASURES</u>
Future strong regional earthquakes	Strong ground shaking imparted to structures (Similar to entire area)	Design structure to accommodate strong earthquake shaking. As a minimum the structure should be designed in accordance with Section 2312 of the Uniform Building Code.
Compressible soils at shallow depth	Possible differential settlement; amount minor for 3- to 4- story structure.	Accommodate settlement in design; plan for even distribution of footing loads.
Ground water at shallow depth	Instability of deep construction excavations; possible seepage into any facility constructed below the water table.	Construct foundations above existing ground water. If necessary to excavate below water level, employ sump pumps and cut slopes no steeper than 1 1/4:1. Floors and walls of subterranean facilities should contain impervious membranes, and should include drainage blankets and gravity drains.
Irregular bedrock surface	No impact unless building loads require pile support. Would then have uncertainties concerning pile lengths needed.	No action unless piles needed. If piles needed, install and load-test "indicator" piles at selected locations throughout the site (during construction); order pile lengths subsequent to determination of results.

TABLE II

MAXIMUM CREDIBLE AND MAXIMUM PROBABLE EARTHQUAKES

<u>Fault Relevant to Project Site</u>	<u>Distance from Site (mi)</u>	<u>Maximum Historical Earthquake</u>	<u>Maximum Credible Earthquake¹</u>	<u>Maximum Probable Earthquake²</u>
Known Active				
San Andreas	30	8 1/3 (1906,1830)	8 1/2	7 1/2 to 8
Hayward	11	7 1/4 (1836,1868)	7 1/2	6 1/2 to 7
Calaveras	18	6 1/2 to 7 (1861)	7 1/2	6 1/2 to 7
Concord	3	5.4 (1955) ³	6 1/2	5 1/2 to 6
Green Valley	6	----	6 1/2 - 7	6 to 6 1/2

¹ The maximum credible earthquake is the maximum earthquake that, in our judgment, appears capable of occurring under the conditions of the presently known geologic framework. It is a rational and believable event that is in accord with present knowledge. In determining the maximum credible earthquake, there is little regard to its probability of occurrence except that its likelihood of occurrence is great enough to be of concern. The maximum probable earthquake would be less than this value.

² The maximum probable earthquake is an event that appears likely within a 100-year time period. The earthquake is regarded as a probable event and not an assured event.

³ Possibly associated with indicated fault.

NOTE: This table is not intended to provide design parameters for the structure, but to provide a summary of the seismic environment in which the site is located. During strong earthquakes associated with the faults shown above, the characteristics (parameters) of the ground motion at the proposed Detention Facility site will depend upon several variable factors: the magnitude and distance of the earthquake, the duration of shaking, and the characteristics of the near-surface soil and rock. Any design parameters should only be developed after consulting with the structural engineer and the soils engineer. However, any design of the proposed structure should consider the historical seismicity, the maximum credible, and the maximum probable earthquakes shown above; and as a minimum, should be designed in accordance with Section 2312 of the 1976 Uniform Building Code.

risk category are to embody sufficient safety to remain functional following an earthquake.

The Contra Costa County Seismic Safety Element states that structures of high occupancy, or whose use after a disaster would be particularly convenient (schools, theaters, churches, hotels, and civic buildings such as fire stations), should have the lowest possible risk to occupants of the structure. In the Element it is estimated that the extra project cost probably required to reduce the earthquake risk to an acceptable level is on the order of 5 to 15%. The additional cost presumes that structures in this acceptable-risk category are to be sufficiently safe to give reasonable assurance of preventing injury or loss of life during an earthquake, but otherwise not necessarily to remain functional.

The Contra Costa County Seismic Safety Element indicates that structures of involuntary occupancy such as jails, should be considered as critical facilities. This would indicate that the proposed Detention Facility should remain functional following an earthquake. It remains for Contra Costa County to designate the level of risk that is acceptable for the facility by indicating whether the structure should remain functional after a maximum credible earthquake, a maximum probable earthquake, or some lesser magnitude event. It may be desirable for the proposed facility to remain functional following a maximum probable earthquake (Table II) and to be sufficiently safe to give reasonable assurance of preventing injury or loss of life during, or following, a maximum probable or maximum credible earthquake (Table II).

Instability of Excavations Below Shallow Ground Water Level

Ground water is present at shallow depths below much of the project site. The presence of shallow ground water represents a potential stability problem for any deep excavations such as basements, elevator shafts, or other underground facilities. Failure of such excavation might conceivably involve closely adjacent property. Excavation below the water table could also require special treatment to prevent seepage into underground structures following their completion.

The most obvious means of mitigating the potential problems that might be caused by shallow ground water is to place the foundation for the planned structure at or near existing grade. We understand that the design now being contemplated includes plans to place the entire structure several feet above the level of subsurface water. However, subsidiary structures such as elevator shafts and an underground pedestrian corridor to the courthouse may possibly extend below the ground water surface. Temporary construction

excavations for such structures would have to be sloped back appropriately; Woodward-Lundgren (1971) recommended sideslopes no steeper than 1 1/4 horizontal to 1 vertical. During construction, a system of drain sumps and pumps capable of removing an estimated maximum inflow of 300 gallons per minute might be required in a relatively large excavation (Woodward-Lundgren, 1971). The design of permanent facilities constructed below the anticipated ground water level should incorporate extensive use of waterproof membranes, and should include subdrains leading to gravity outlets (Woodward-Lundgren, 1971).

Differential Settlement

Under a relatively thin, near-surface layer of very stiff, silty clay which is stated to be capable of providing good foundation support, wet, relatively compressible, silty soils are reported to exist (Woodward-Clyde Consultants, 1976b). Therefore, if the foundation configuration requires placement of some of the footings below the near-surface clay, some differential settlement could occur (Woodward-Clyde Consultants 1976b). Moreover, it appears that the compressibility of the soils may be too great to permit safe use of conventional footings if a relatively tall (higher than approximately 4-story), or excessively heavy, structure were to be erected on the site (Woodward-Lundgren, 1971).

The most recent settlement analysis (Woodward-Clyde Consultants, 1976b) indicates that the structure should be designed to accommodate differential settlement of 3/4 inch between bays and a total settlement of 3/4 inch to 1 1/2 inches. The report cited also cautions that loads in each footing should be kept as similar as practical to produce footings of a uniform size and thereby minimize differential settlements.

Irregular Bedrock Surface

The depth to bedrock varies substantially across the site, as shown on Figure 6. Should a change in configuration, or weight, of the building require use of pile foundations, higher costs might very likely be incurred to accommodate this variation.

According to the most recent soils and siting analysis (Woodward-Clyde Consultants, 1976b), depth to bedrock is not a controlling item. That analysis assumes that the imposed loads can be accommodated by a spread footing foundation design. Should a new building configuration result in substantially higher foundation loads, pile foundations may

become appropriate. In that event, the variation in bedrock depth would influence, in a manner that cannot be entirely predetermined, the length of the piles used. For that reason, Woodward-Lundgren (1971) recommended that ordering of pile lengths during construction should be based on about a dozen indicator piles placed throughout the site at locations selected by the soil engineer.

Other Considerations

In addition to the items discussed above, the possible risk to the site from the phenomena of surface fault rupture, liquefaction, lurching, and seismically induced flooding has been considered. In our opinion, none of these phenomena are likely to occur at the site; therefore, no impact is expected and no mitigating measures are recommended. However, it is recommended that the grading and any excavations be examined for any changes in anticipated geological or soil conditions; and that any changes be brought to our attention immediately.

REFERENCES

- Bolt, B. A., Lomnitz, C., and McEvilly, T. V., 1968, Seismological evidence on the tectonics of central and northern California and the Mendocino escarpment: Bulletin of the Seismological Society of America, v. 58, no. 6, p. 1725-1754.
- Brown, M. G., 1970, Surface faulting and related effects: in Earthquake Engineering, R. L. Wiegel, ed., Prentice Hall.
- Bowen, O. E. and Crippen, R. A., Jr., 1951, Geologic map of the San Francisco Bay Region, in Jenkins, O. P., ed., Geologic guidebook of the San Francisco Bay Counties: California Division of Mines Bulletin 154.
- California Division of Mines and Geology, 1962, Geologic map of Port Chicago and vicinity: in Geologic guide to the gas and oil fields of Northern California, California Division of Mines and Geology Bulletin 131.
- California Division of Mines and Geology, 1974, Special Studies Zone, Port Chicago quadrangle: scale 1:24,000.
- Contra Costa County Planning Department, 1976, Preliminary geologic map of Contra Costa County: unpublished map available from Contra Costa County Public Works Department, scale 1:62,500.
- Contra Costa County Planning Department, 1975a, Seismic Safety Element technical background report, 236 p.
- Contra Costa County Planning Department, 1975b, Seismic Safety Element, 88 p.
- Cooper-Clark & Associates, 1974, Seismic and related aspects of the proposed Detention Facility, Martinez, California: Appendix A, Draft environmental impact report, Contra Costa County, California, Criminal Justice Detention Facility.
- Davis, F. F. and Goldman, H. B., 1958, Mines and mineral resources of Contra Costa County: California Journal of Mines and Geology, v. 54, no. 4.
- Dooley, R.L., 1972, Geology along the Green Valley fault, Solano County, California: California Division of Mines and Geology Open File report, 15 p.

- Engeo Incorporated, 1976, Alquist-Priolo seismic hazard study addendum, subdivision 4442, Pine Ridge, Martinez, California: consultants' report to Security Owners Corporation, Martinez, California.
- Harding, C. R., 1929, Location and design of Southern Pacific Company's Suisun Bay Bridge as affected by consideration of earthquakes: Seismological Society of America Bulletin, v. 19, no. 3, p. 162-166.
- Harding, Miller, Lawson & Associates, 1970, Soil investigation, District educational center building, Contra Costa County Junior College District, Martinez, California: unpublished consultants' report to Contra Costa Junior College District, Cometta & Cianfichi, Frederick L. R. Confer & Associates.
- Holden, E. S., 1898, A Catalogue of Earthquakes on the Pacific Coast, 1769 to 1897: Smithsonian Miscellaneous Collections 1087.
- Jennings, C. W., 1975, Fault map of California with locations of volcanoes, thermal springs and thermal wells: California Division of Mines and Geology, California Geologic Data Map series, Map No. 1.
- Lawson, A. C., 1914, Geologic atlas of the United States, San Francisco folio: U. S. Geological Survey.
- Lutz, G. C., 1951, The Sobrante Sandstone: University of California, Department of Geological Sciences Bulletin, v. 28, no. 13, p. 367-406.
- Murphy, L. M. and Cloud, W. K., 1957, United States earthquakes, 1955: U. S. Department of Commerce, Coast and Geodetic Survey.
- Nichols, D. R. and Wright, N. A., 1967, Preliminary map of historic margins of marshland, San Francisco Bay, California: U. S. Geological Survey Open File Report.
- Poland, J. F., 1935, Groundwater conditions in Ygnacio Valley, California: unpublished A.M. Thesis, Stanford University.
- Saul, R. B., 1973, Geology of the SW-1/4 of the Walnut Creek quadrangle: California Division of Mines and Geology Map Sheet 16.
- Saul, R. B., 1967, The Calavaras fault zone in Contra Costa County, California: California Division of Mines and Geology, Mineral Information Service, V. 20, no. 3, p. 35-37, Map on p. 36, scale 1 inch= approximately 6500 feet.

- Sharp, R. B., 1973, Map showing recent tectonic movement on the Concord fault, Contra Costa and Solano Counties, California: U. S. Geological Survey Misc. Field Studies Map MF 505.
- Sims, J. D.; Fox, K. F., Jr.; Bartow, J. A.; and Helley, E. J., 1973, Preliminary geologic map of Solano County and parts of Napa, Contra Costa, Marin, and Yolo Counties, California: U. S. Geological Survey Miscellaneous Field Studies Map MF-484.
- Tolman, C. F., 1931, Geology of upper San Francisco Bay region, in Economic aspects of a salt water barrier confluence of Sacramento and San Joaquin Rivers: California Division of Water Resources Bulletin 28, Appendix D, p. 311-353.
- Weaver, C. E., 1949a, Geology of the Coast Ranges immediately north of San Francisco Bay region, California: Geological Society of America Memoir 35, 242 p.
- Weaver, C. E., 1949b, Geology and mineral deposits of an area north of San Francisco Bay, California Division of Mines Bulletin 149.
- Weaver, C. E., 1953, Eocene and Paleocene deposits of Martinez, California: University of Washington Publications in Geology, v. 7, p. 1-102.
- Woodward-Clyde and Associates, 1955, Soil investigation for County Health Building: unpublished consultants' report; boring logs 1, 2, and 3.
- Woodward-Clyde Consultants, 1976a, Preliminary soil investigation, proposed Detention Facility - Civic Center, Martinez, California: unpublished report to Public Works Department, Contra Costa County, by Woodward-Clyde Consultants, Oakland, California.
- Woodward-Clyde Consultants, 1976b, Contra Costa County Detention Facility, preliminary soils and siting analysis, five block Civic Center area: unpublished report to Department of Public Works, Contra Costa County, by Woodward-Clyde Consultants, Oakland, California.
- Woodward-Clyde Consultants, 1976c, Preliminary fault study, proposed Contra Costa County Detention Facility: unpublished consultants' report to Contra Costa County Public Works Department.

Woodward-Clyde Consultants Aerial Photograph Library, USGS color low-sun-angle aerial photos 1-33 through 1-39, and 1-72 through 1-78, dated 9-21-73, scale 1:20,000; USGS color low-sun-angle aerial photos 10-1 through 10-4, dated 7-17-74, scale 1:36,000; U.S.D.A. black-and-white aerial photos BUU-280-106 through 109, BUU-280-80 through 85, dated 7-25-39, BUU-283-67 through 71, dated 7-30-39, scale 1:20,000; Pacific Resources Inc. black-and-white aerial photos AV 905-05-32 through 36, dated 5-20-69, scale 1:12,000.

Woodward-Lundgren & Associates, 1971, Soil investigation for the Martinez County Jail, Pine and Ward Streets, Martinez, California: unpublished report to Buildings and Grounds, Contra Costa County, by Woodward-Lundgren & Associates, Oakland, California.

Woodward-Clyde-Sherard & Associates, 1960, Soil investigation for Contra Costa County Administration Building additions: unpublished consultants' report to Contra Costa County Board of Supervisors, boring logs 1 and 2.

Chapter 8

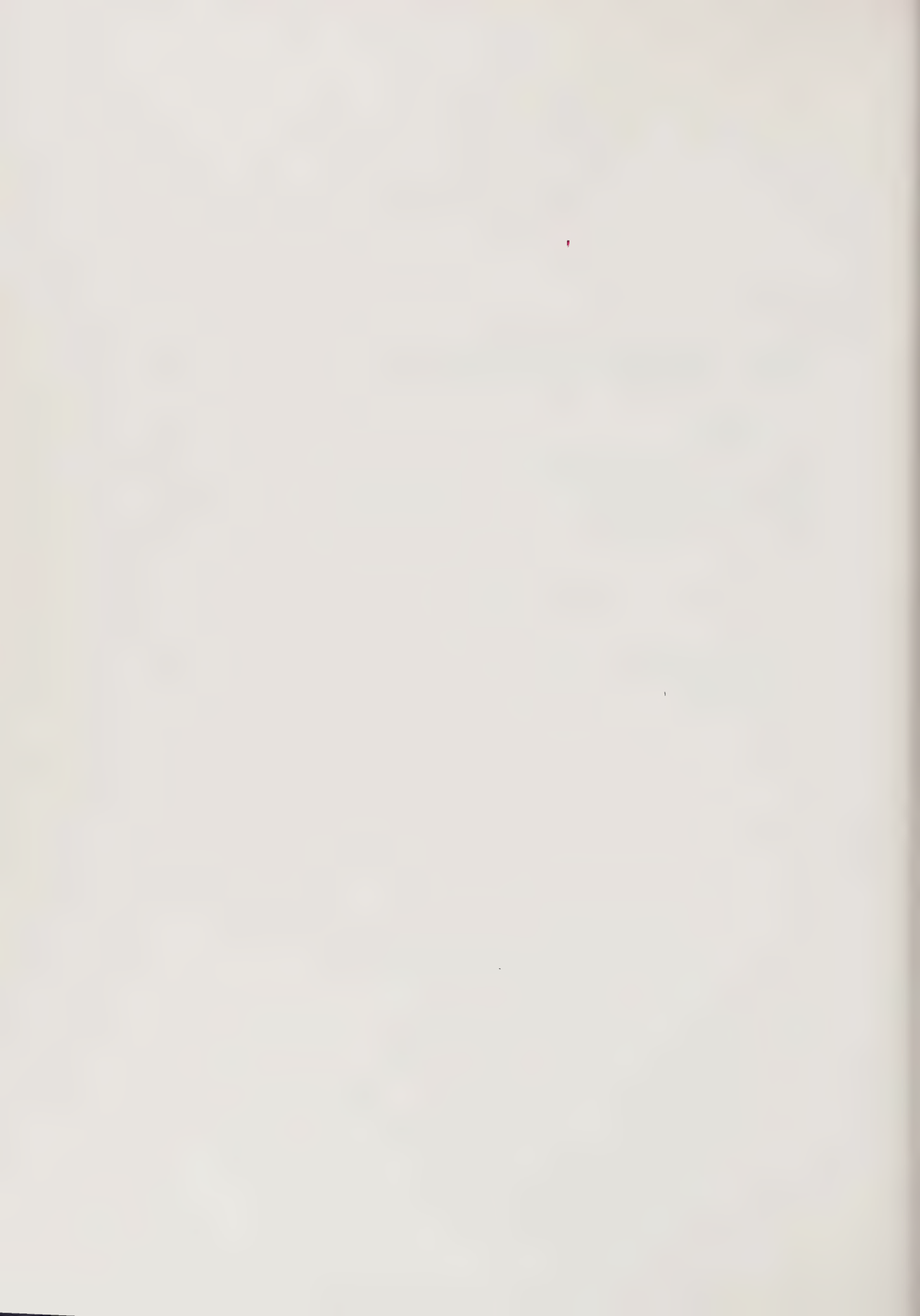
BIOTIC RESOURCES

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Planning Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	
Section I: HISTORIC BIOTIC RESOURCES	8-2
Section II: PROCEDURES AND METHODOLOGY	8-3
Section III: RESULTS OF SURVEY	8-3
Vegetation	8-3
Wildlife	8-5
Section IV: CONCLUSIONS	8-7
Section V: IMPACTS AND MITIGATING MEASURES	8-7
Section VI: APPENDIX	8-9
Section VII: REFERENCES	8-15
ILLUSTRATIONS AND TABLES	
MAPS	
Major Vegetation of Contra Costa County Detention Facility Site	8-4



INTRODUCTION

This report describes and analyzes biotic resources (vegetation and wildlife) within and surrounding the area under consideration for construction of the proposed County Detention Facility in Martinez. The report is divided into seven sections:

- Section I. Historic Biotic Resources: describes vegetation and wildlife as existed historically in the Martinez area. Chronologically describes the transition from native valley oak woodland, grassland, and riparian woodland habitats in the pre-Spanish era to the urbanized environment that presently exists.
- Section II. Procedures and Methodology: briefly describes the area that was studied and the procedures that were utilized in assessing the existing biotic resources.
- Section III. Results of Survey: divided into two sub-sections which separately discuss existing vegetation and wildlife. Each sub-section covers the following subjects: species composition in general (species lists are included in the Appendix); environmental conditions or population stability; rare, endangered or unique species; relationships to the County Civic Center planning area and to surrounding areas.
- Section IV. Conclusions: summarizes findings and analyses relative value of biotic resources within the area under consideration.
- Section V. Impacts and Mitigating Measures: discusses possible impacts construction of Detention Facility might have on vegetation and wildlife, and suggests mitigating measures to reduce or avoid the noted impacts.
- Section VI. Appendix. includes map and list of major trees found within the area inventoried, list of plants identified on a block-by-block basis, and list of sited or probable wildlife species within the area surveyed.
- Section VII. References.

SECTION I HISTORIC BIOTIC RESOURCES

The composition of vegetation and wildlife in the Martinez area has undergone considerable change since 1772, when the first European description of the area by the Spaniard, Don Pedro Fages, was recorded. There has been a near-complete transition from the existence of native plants and animals in an undisturbed state to the occurrence of a wide variety of exotic and/or domesticated plants and animals in an environment dominated by humans.

Prior to settlement of the area in the mid-1800's, the dominant vegetation types in the valley in which the City of Martinez is presently located appear to have been valley oak woodland, native grassland, and riparian (streamside) woodland¹. A prominent feature in the valley was Alhambra Creek (Arroyo del Hambre). The creek and lush riparian vegetation which lined its banks must have attracted a large variety of wildlife for water, food and shelter.

Most noticeable changes to the biota in the Martinez area began after settlement of the townsite in the 1850's. Before that time Karquin Indians inhabited the shoreline region (see Detention Facility background report, Archaeology) and, later, ranching was pursued by Spanish (1787-1821) and Mexican (1822-1848) inhabitants. Any effects the Karquin might have had on the biotic resources were insignificant in context with European and American influences. Spanish and Mexican-influenced effects were probably limited to minor wood cutting and indirect causation of the transition of grassland composition from native perennial 'bunchgrass' species to European annual grass and weed species².

The Martinez shoreline has undergone many physical and vegetative changes in the past 150 years. Prior to the mid-1800's the shore was apparently dominated by an expansive sandy beach. Water depth increased markedly a short distance from the shoreline. Both the harbor area and the mouth of Alhambra Creek served as popular mooring areas for sailing vessels of many kinds. In the 1850's hydraulic mining in the Sierra foothills caused an enormous amount of silt to be carried down the Sacramento and San Joaquin River systems³. Apparently, increased siltation in the Martinez area resulted in the establishment of a brackish tidal marsh along the coast. A railroad was built along the shoreline in the late 1870's "where it served industrial and wharf facilities. Since that time landfill, deposits from dredging operations at the piers, together with silt deposits caused by disruption⁴ of the natural shoreline has formed the land area...north of the railroad tracks".

¹ This assumption is based on historic photographs produced in the Martinez Morning News-Gazette (April 17, 1976) and various historic descriptions of Contra Costa County in general.

² This transition is well documented. For brief explanation, see Werminski, pp. 21 - 22.

³ Martinez Morning News-Gazette, April 17, 1976.

⁴ Martinez Waterfront Land-Use Development Plan, 1976.

Discovery of gold in the Sierra Nevada foothills precipitated the settlement and incorporation of Martinez, which led to profound changes in local vegetation and wildlife. The townsite was laid out in 1849, and by 1876 the town was a bustling County seat with extensive commercial and agricultural development, an operating railroad, and an active wharf. As early as 1873 many plants were being imported from all parts of the world, largely by Dr. John Strenzel, an early horticulturist and reknown Martinez settler. At that time, local wildlife appears to still have been fairly abundant and diverse. Mrs. Louisana Strenzel, the Dr.'s wife, documented that wolves were common in the vicinity in 1873.⁵

Continued development and other human influences resulted in the present biotic composition and condition in the Martinez area. In general, local vegetation is composed of few native species (some planted in landscape situations, others occurring voluntarily) and many introduced species that grow successfully in the local Mediterranean climate-type. Riparian vegetation is limited to a narrow strip along the banks of Alhambra Creek (portions where it has not been channelized), and includes many non-native species. The extensive marsh that once dominated the shore has largely been replaced by artificial fill.

SECTION II PROCEDURES AND METHODOLOGY

An inventory and survey of the existing biotic resources were conducted in an area under consideration for the site of the proposed County Detention Facility. The study area consisted of the County-owned land within the six City blocks bounded by Ward Street to the north, Willow Street to the east, Mellus Street to the south, and Court Street to the west (see Major Vegetation Map). The survey was conducted on foot. Major plant species (trees, shrubs and forbs) were identified and prominent trees were mapped (see Major Vegetation Map; more detailed inventory maps are on file in the County Planning Department). Sited wildlife species were identified and a list was compiled of sited species plus those species not seen during the study but known to commonly occur in the vicinity through previous sitings and literature. Lists of plant and animal species are contained in the Appendix, Section VI of this report.

In addition to the inventory, the surrounding area was briefly surveyed to compare biota within the proposed Facility area to that of the rest of the County Civic Center planning area and to that outside the Center.

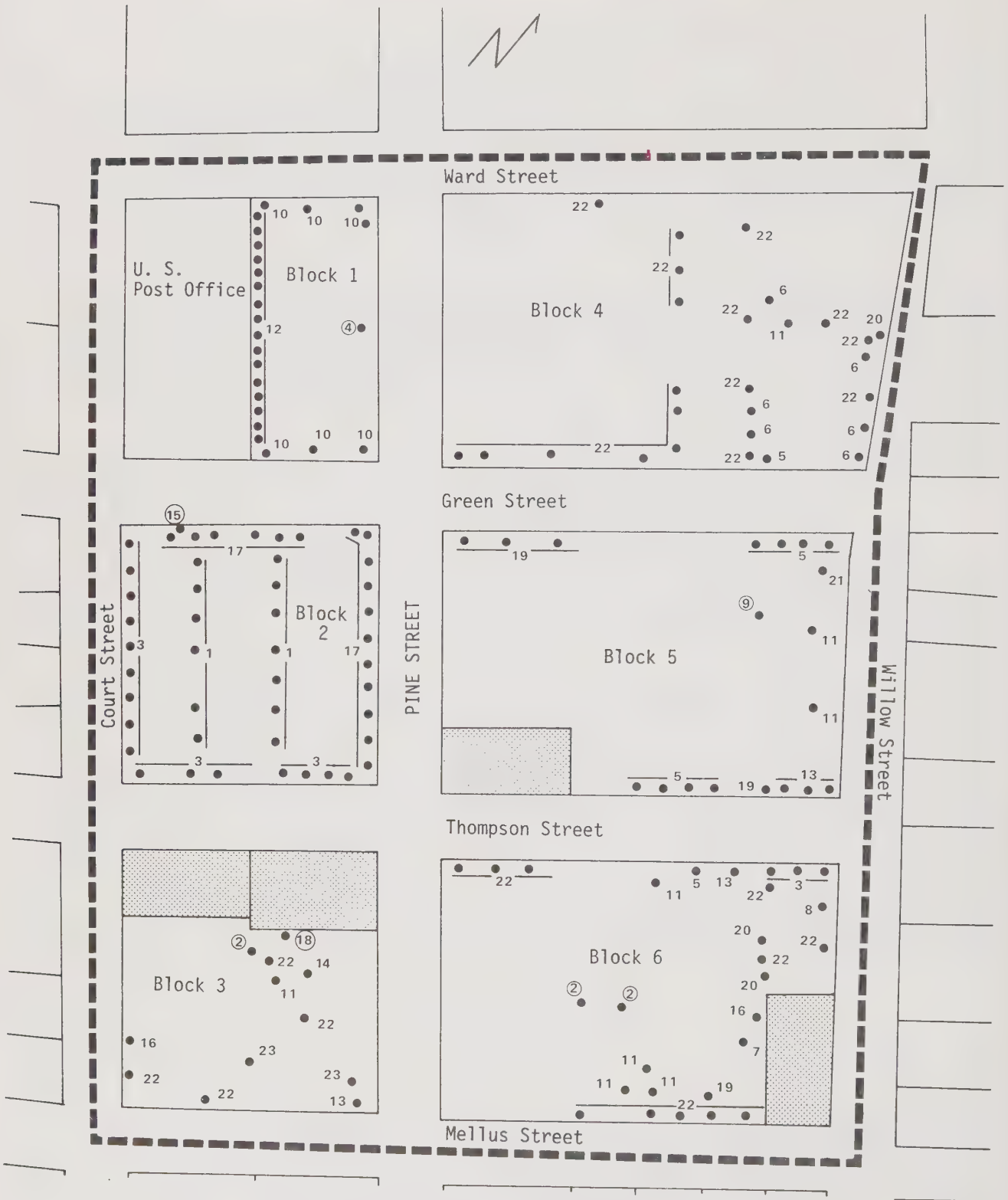
SECTION III RESULTS OF SURVEY

Vegetation

Species Composition: A great diversity of plant species occurs within the six block area under consideration for the proposed County Detention Facility. The greatest diversity is found within the existing residential areas in all of Block 6 and portions of Blocks 4 and 5 (See Major Vegetation Map). Individual plantings by residents over many years have created this mix of existing species. Those

⁵Martinez Morning News-Gazette, April 17, 1976.

MAJOR VEGETATION OF CONTRA COSTA COUNTY DETENTION FACILITY SITE



② Significant Trees

Under Negotiation for
County Acquisition 2/4/77



blocks or partial blocks maintained by County grounds maintenance crews (Blocks 1 and 2) support a moderate diversity of species due to the planned landscape and repetition of species. Portions of Blocks 3 and 5 have recently been razed. The only species that remain are the few border plants not removed and some volunteer weedy species. Half of Block 4 is graveled and used for parking, and supports similar sparse vegetation. These razed or graveled areas consequently support the least diversity of species.

Most plant species are not native to the area but are exotic species introduced from the Mediterranean region, or from areas of a similar mild climate. A very large variety of exotic species have been planted throughout the past century. (Some of them, such as cardoon and tree of heaven, have adapted so well that they are now common weeds in the Martinez area.) Most of the existing native species have also been planted; few appear to have grown without human assistance. (See Appendix for existing native species and those which appear to have grown voluntarily.)

Environmental conditions: Environmental conditions of the vegetation vary with general land uses within the area surveyed. Specific conditions have resulted from three general uses: parking lots maintained by County ground crews, vacant or razed areas, and residential areas.

Maintained parking lots are located within Blocks 1 and 2 (See Major Vegetation Map). Vegetation in these lots is well-tended, pruned, and generally of excellent health. Fewer weedy species occur in these areas than in other portions of the area studied. The major exception to the 'excellent health' tendency is the poor condition of the white alders in Block 2. These trees appear unhealthy, possibly due to an over-abundance of water.⁶ The environmental condition of these parking lots in general may be considered good.

Vacant areas in most of Block 3 and portions of Blocks 4 and 5 support weedy species (e.g., bull thistle, mustard, Bermuda grass, tree of heaven, morning glory) and 'border trees' (e.g., walnut, sycamore, catalpa). Block 3 additionally supports volunteer native species (valley oak, Mexican elderberry) and plants remnant of the former residential use in the interior of the block. Several of the trees in these areas are in poor states of health and are not pruned. The walnut trees are particularly unhealthy. The graveled portion of Block 4 supports only a few weeds due to its use as a parking area. Most of the vacant area within Block 5 was oiled following razing in early Spring, 1976, and supports almost no vegetation.

The condition of vegetation within existing residential areas in all of Block 6 and portions of Blocks 4 and 5 is generally overgrown but healthy. Specific conditions vary with individual parcels, as some homes are used as County offices, others are rented as residences, and others are unoccupied.

Rare, endangered or unique species: In its natural state, the California black walnut is considered to be rare and endangered by the California Native Plant Society and endangered by the U.S. Department of the Interior. This species is

⁶Doug Healy, Contra Costa County, Public Works Department.

common within the area inventoried, either as root stock for the English walnut or as volunteer regrowth from the stock specimens. None occur in a natural state, therefore none are considered rare or endangered from a statutory point of view.

No other species considered to be rare, endangered or unique were identified in the area surveyed. None are likely to occur due to the disturbed, urbanized state of the area.

Relationship to Civic Center planning area: Generally, vegetation in the remaining portion of the Civic Center planning area is similar in form and environmental condition to that found in Blocks 1 and 2. Dominant plants in both areas are non-native species of good health and vigor, are carefully maintained, and have been professionally landscaped.

Several of the species identified within the proposed Detention Facility area are also found in these most northwesterly blocks of the Civic Center. These include Canary Island date palm, dracaena palm, Italian cypress, juniper (several species), Hans ivy, India hawthorne, purple leaf plum, philodendron, and ornamental roses.

Other species are found only in this northwesterly section. Examples include magnolia, fruitless mulberry, liquidambar, eucalyptus, wild strawberry and several species of pine.

Vegetation in Blocks 3 - 6 sharply contrasts with that occurring in the rest of the Civic Center planning area. In the former, species diversity is greater, weedy species are more prevalent, plant health is not as good, and landscaping appears haphazard.

Relationship to surrounding area: Vegetation in residential areas adjacent to the area surveyed to the northeast, east, south, and southwest is similar to that found in residential portions of Blocks 4, 5 and 6. Species diversity is great throughout, native plants are uncommon, and environmental conditions vary with individual homes.

Commercial areas in blocks west of the area surveyed are nearly void of vegetation. Outdoor plants are limited to a few exotic or garden species contained in planters.

Northwest of the Civic Center planning area, large vacant lots (artificial fill) support weedy species, and marshlands support a variety of native species common to tidal marshes in Contra Costa County (e.g., bulrush, cattail, pickleweed, salt grass).

Wildlife

Species composition: The area surveyed is fairly typical of most urban habitats and supports a relatively limited diversity of wildlife species. Few mammals, reptiles, or amphibians can tolerate the close and continuous presence of humans,

⁷ Herbert L. Mason, 1974.

predation by domestic cats and dogs, or the lack of preferred food and cover. On the other hand, many birds (particularly songbirds) and insects find this habitat suitable. Residential vegetation in particular provides dense tree and shrub cover for nesting birds. The diversity of plants provides variety of food for birds and hosts for insects. A list of vertebrates seen during the survey or known to occur in similar habitats in the County is included in the Appendix, Section VI of this report.

A number of species commonly found in local urban habitats and likely to occur in the area surveyed are non-native species which have adapted to this human-dominated environment. These species include the domestic pigeon, house sparrow, starling, opossum, fox squirrel, Norway rat, black rat, and house mouse. Most of these introduced species are often considered pests.

The greatest number and diversity of wildlife species probably occur in the residential portions of the proposed Detention Facility site where food and cover are most abundant. Residential areas have the highest wildlife value in the area surveyed but have relatively low value in context with all available habitats in the County.

Population Stability: While details of population dynamics are beyond the scope of this report, some generalizations may be inferred. Populations of rodents and songbirds are probably stable in residential areas due to the relative abundance of food and cover. Resident populations in other portions of the area surveyed are probably very limited, if not absent, due to the disturbed or sterile nature of the landscaped parking lots and razed or vacant areas.

Rare, endangered or unique wildlife: No wildlife species considered to be rare, endangered or unique by public agencies or local experts were sited within the area studied. None are likely to occur due to the urbanized, disturbed environment.

Relationship to Civic Center planning area: Landscaped areas in the northwesterly portion of the Civic Center are similar in wildlife value to the landscaped parking lots in Blocks 1 and 2. Few species can tolerate this relatively sterile habitat as discussed above. However, nesting birds may reside here, and a few species such as the domestic pigeon, barn owl, and black rat may utilize County buildings for nesting or perching. Overall, the area has a poor wildlife value.

Relationship to surrounding area: Residential areas near the proposed Detention Facility site are similar in wildlife value to the existing residential portions of the proposed site. Commercial blocks to the west hold almost no value for wildlife due to the absence of vegetation. Large vacant lots northwest of the Civic Center similarly have little value, although a few rodents and birds may inhabit or visit this area. On the other hand, the Martinez marsh has a high wildlife value. Although disturbed by filling and/or dumping and located in proximity to humans, the marsh is fairly rich in bird life. Various shorebirds, waterfowl, marshbirds, gulls, and birds of prey (raptors) frequent the area. The white-tailed kite, a raptor that was once widespread in the United States but is now a rarity east of the Sierra Nevada, commonly hunts in the marsh. The Suisun song sparrow, a subspecies found only in the Suisun Bay region marshes, is also known to occur here. Other rare, endangered or unique species have been observed in nearby marshes and may be found in the Martinez marsh. These include the salt marsh harvest mouse, river otter, California clapper rail and black rail.

SECTION IV CONCLUSIONS

Biotic resources within a six block area in Martinez under consideration for the site of the proposed County Detention Facility can be generally grouped into three categories: 1) Existing residential areas support the most diversified vegetation and most valuable wildlife habitat among the three categories. However, the value of these residential areas compared with less human-influenced areas near Martinez is not substantial. Most plants and many wildlife species occurring here are not native, but are exotic species which have adapted to the climate and man-dominated environment. 2) County landscaped and maintained areas are somewhat below residential areas in biotic value. Most plant species are exotic, limited in diversity, and repetitive as a result of landscape design. Wildlife value is minimal due to the manicured, rather sterile environment and absence of preferred food and cover. 3) Vacant or razed areas support minimal vegetation (largely weed species) that is generally unhealthy and unkempt. Wildlife value is poor due to the disturbed nature of these areas.

SECTION V IMPACTS AND MITIGATING MEASURES

Possible impacts on the biota will depend upon the specific design and setting of the proposed Detention Facility. Generally, however, biotic impacts should be insignificant in context with other possible or certain impacts and/or with vegetation and wildlife resources in surrounding areas. Most of the plants existing within the site are exotic, are commonly planted in surrounding areas, and are easily grown. Wildlife is limited due to unnatural conditions and, like the vegetation, is dominated by exotic species. Specific impacts and suggested mitigating measures are discussed below.

1. Impact: The largest, and therefore probably most irreplaceable, plant species include the mature Canary Island date palm in Block 1 (adjacent to Pine Street), Port Orford cedar in Block 2 (adjacent to Green Street), Siberian elm in Block 3, and Deodar cedar in 5 (See Major Vegetation Map). Three large blackwood acacias, frequently planted in the Martinez area, are located in Blocks 3 and 6. Removal of any of these trees would constitute a significant biotic impact as these are mature, healthy specimens of these species.

Mitigating measure: All efforts should be made to retain these specimens, as well as other trees within the proposed site. All or any of these trees could be made part of an attractive landscaping plan (e.g., within parking lots).

2. Impact: Removal (or razing, as has recently occurred in Blocks 3 and 5) of the existing residential areas in portions of Blocks 4 and 5 and all of 6 would eliminate the most diverse vegetation and valuable wildlife habitat within the proposed site.

Mitigating measure: On the basis of biotic resources alone, vacant and/or County maintained areas should be given highest consideration for the site of the proposed Detention Facility. Although some of the residential vegetation

is overgrown and largely exotic, the greatest numbers and kinds of plants occur here, and wildlife value appears to be higher here than in other portions of the area surveyed.

Retention of these houses, whether they be used for offices or residences, would mitigate the loss of biotic resources and could also serve to establish a buffer between surrounding residential neighborhoods and the proposed facility.

3. Impact: Existing vacant and/or recently razed areas have almost no value for wildlife, and for the most part support unsightly weedy vegetation. These areas are not aesthetically pleasing and are currently unused. Construction of a County Detention Facility would have a positive impact on biotic resources as it would include landscaping that is coordinated with existing County facilities in the Civic Center. The poor biotic value that exists could not be further decreased, and the presence of healthy, maintained vegetation would be attractive in this urban environment. This positive impact constitutes a mitigating measure in itself.

SECTION VI

APPENDIX I

INVENTORY OF MAJOR VEGETATION IN PROJECT AREA

Block 1: Parking lot east of U.S. Post Office, bounded by Ward, Pine, Green and Court Streets.

- Trees: Cordyline australis (Dracaena palm)
Phoenix canariensis (Canary Island date palm)
Shrubs: Cupressus sempervirens (Italian cypress)
Hedera Helix var. hahnii (Hans ivy)
Raphiolepis indica (India hawthorne)

Block 2: Parking lot bounded by Green, Pine, Thompson, and Court Streets.

- Trees: Aesculus carnea (Red horsechestnut)
*Alnus rhombifolia (White alder)
Chamaecyparis lawsoniana (Port Orford cedar)
Cinnamomum camphora (Camphor tree)
Shrubs: Juniperus sp. (Juniper)
Pittosporum tobira var. variegata (Tobira)
Forbs: Hypericum calycinum (Aaron's beard)

Block 3: Block bounded by Thompson, Pine, Mellus and Court Streets.

- Trees: Acacia melanoxylon (Blackwood acacia)
*Acer macrophyllum (Bigleaf maple)
Ailanthus altissima (Tree of heaven)
Catalpa speciosa (Western catalpa)
*Juglans Hindsii (California black walnut)
Hindsii-, J. regia (Ca. Black walnut-English walnut, grafted)
Malus sp. (Apple)
Prunus cerasifera var. Atropurpurea (Purple-leaf plum)
**Quercus lobata (valley oak)
Robinia pseudoacacia (Black locust)
Salix sp. (willow)
**Sambucus mexicana (Mexican elderberry)
Ulmus pumila (Siberian elm)
Shrubs: *Heteromeles arbutifolia (Toyon)
Forbs: Amaryllis belladonna (Naked lady)

Block 4: Parking-residential block bounded by Ward, Willow, Green and Pine Streets.

- Trees: Callistemon sp. (Bottlebrush)
Catalpa speciosa (Western catalpa)
Ficus carica (Edible fig)
*Juglans Hindsii (California black walnut)
J. Hindsii - J. regia (Ca. black walnut-English walnut, grafted)
Malus spp. (Apple, crabapple)

- Malus spp. (Apple, crabapple)
Pistacia chinensis (Chinese pistache)
Prunus sp. (Peach)
Shrubs: Aucuba japonica (Japanese aucuba)
Choisya terriata (Mexican orange)
Hedera helix (English ivy)
*Heteromeles arbutifolia (Toyon)
Myrtus sp. (Myrtle)
Nerium oleander (Oleander)
Pelargonium sp. (Geranium)
Plumbago auriculata (Cape plumbago)
Pyracantha sp. (Pyracantha)
*Rosa californica (California wild rose)
Rosa spp. (Ornamental roses)
Forbs: Althea rosea (Hollyhock)
Amaryllis belladonna (Naked lady)
*Eschscholzia californica (California poppy)
Iris sp. (Iris)
Lathyrus odoratus (Sweet pea)

Block 5: Residential and recently razed block bounded by Green, Willow, Thompson, and Pine Streets.

- Trees: Acer sp. (Maple)
Catalpa speciosa (Western catalpa)
Cedrus deodara (Deodar cedar)
Citrus sp. (Lemon)
Pittosporum undulatum (Victorian box)
*Platanus racemosa (California sycamore)
Prunus cerasifera var. Atropurpurea (Purple-leaf plum)
Shrubs: Bougainvillea sp. (Bougainvillea)
Hedera helix (English ivy)
*Heteromeles arbutifolia (Toyon)
Juniperus sp. (Juniper)
Leptospermum laevigatum (Australian tea tree)
Pathenocissus quinquefolia (Virginia creeper)
Plumbago auriculata (Cape plumbago)
Pyracantha sp. (Pyracantha)
Forbs: *Eschscholzia californica (California poppy)
Oxalis sp. (Oxalis)

Block 6: Residential block bounded by Thompson, Willow, Mellus and Pine streets.

- Trees: Acacia melanoxylon (Blackwood acacia)
*Acer macrophyllum (Bigleaf maple)
Betula verrucosa var. Dalecarlica (Cutleaf weeping birch)
Cinnamomum camphora (Camphor tree)
*Juglans Hindsii (California black walnut)
J. Hindsii - J. regia (Ca. black walnut-English walnut, grafted)

- Malus sp. (Apple)
Persea sp. (Avocado)
 *Platanus racemosa (California sycamore)
Prunus cerasifera var. Atropurpurea (Purple-leaf plum)
Prunus sp. (Apricot)
Salix matsudana var. Tortuosa (Corkscrew willow)
Shrubs: Aucuba japonica (Japanese aucuba)
Bambusa sp. (Bamboo)
Buxus sempervirens (Common boxwood)
Camellia japonica (Camellia)
Choisya ternata (Mexican orange)
Escallonia sp. (Escallonia)
Hedera canariensis var. Variegata (Variegated Algerian Ivy)
H. helix (English ivy)
Heteromeles arbutifolia (Toyon)
Hydrangea sp. (Hydrangea)
Juniperus spp. (Juniper)
Ligustrum ovalifolium (California privet)
Nerium oleander (Oleander)
Philodendron sp. (Philodendron)
Pyracantha spp. (Pyracantha)
Rosa sp. (Ornamental rose)
Forbs: Asparagus plumosa (Fern asparagus)
Iris sp. (Iris)

*species native to area which have been planted.

**native species which may have occurred voluntarily.

APPENDIX II

LIST OF VERTEBRATES LIKELY FOUND IN PROJECT AREA

- Amphibians: Pacific treefrog (Hyla regilla)
California slender salamander (Batrachoseps attenuatus)
Western toad (Bufo boreas)
- Reptiles: Western fence lizard (Sceloporus occidentalis)
Pacific gopher snake (Pituophis melanoleucus catenifer)
Coast garter snake (Thamnophis elegans terrestris)
- Birds: California quail (Lophortyx californicus)
Domestic pigeon (Columba fasciata)
Barn owl (Tyto alba)
Anna's hummingbird (Calypte anna)
Acorn woodpecker (Melanerpes formicivorus)
House sparrow (Passer domesticus)
Scrub jay (Aphelocoma coerulescens)
Common bushtit (Psaltirparus minimus)
House wren (Troglodytes aedon)
*Northern mockingbird (Mimus polyglottos)
Robin (Turdus migratorius)
European starling (Sturnus vulgaris)
*Brewer's blackbird (Euphagus cyanocephalus)
House finch (Carpodacus mexicanus)
*Brown towhee (Pipilo fuscus)
Northern junco (Junco hyemalis)
- Mammals: Opossum (Didelphis virginianus)
Broad-footed mole (Scapanus latimanus)
Big brown bat (Eptesicus fuscus)
Raccoon (Procyon lotor)
*Fox squirrel (Sciurus niger)
Botta pocket gopher (Thomomys bottae)
Norway rat (Rattus norvegicus)
Black rat (R. rattus)
House mouse (Mus musculus)

*observed in study area during survey.

APPENDIX III

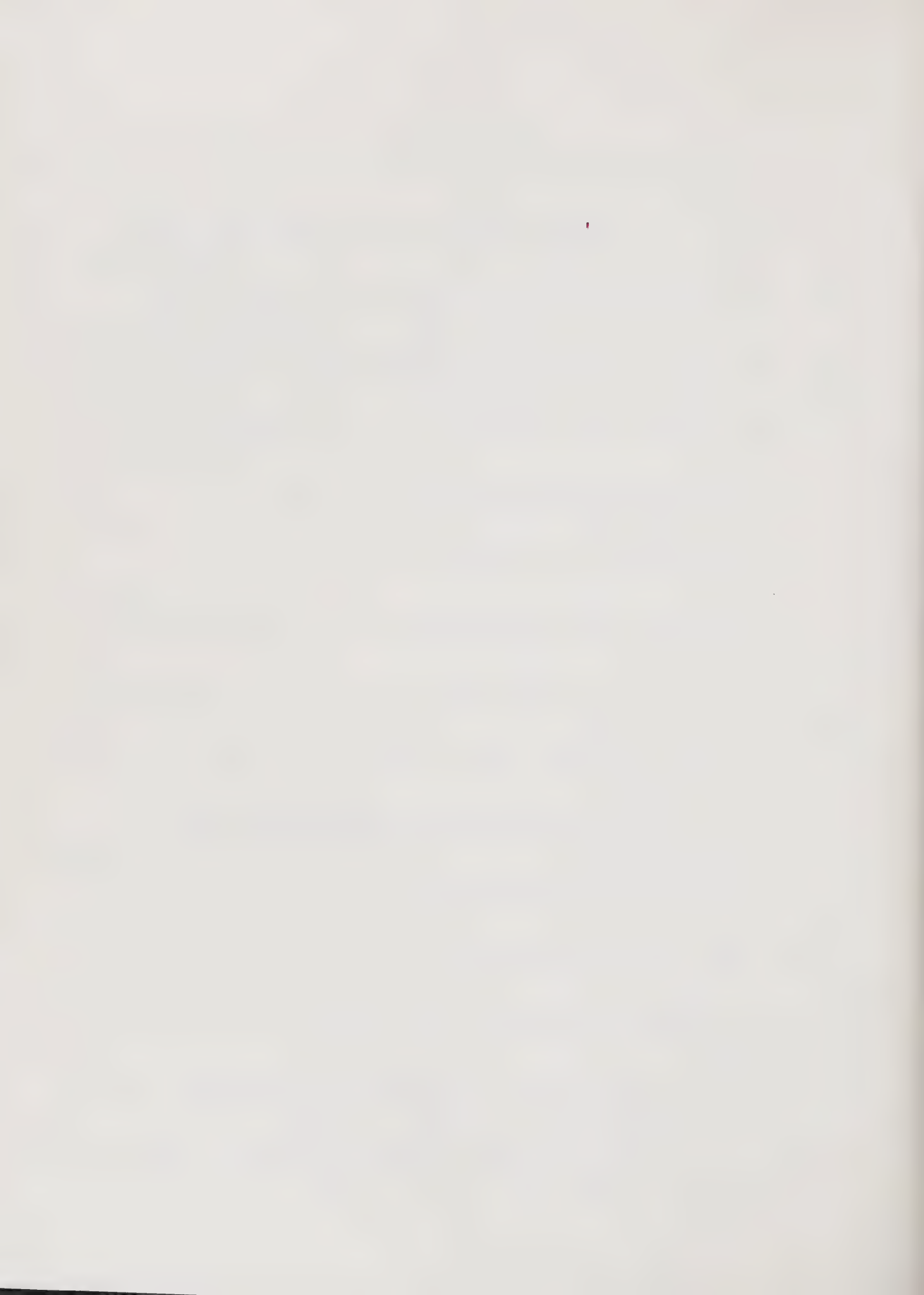
Legend for "Major Vegetation of Contra Costa County Detention Facility Site" Map

- | | |
|--|------------------------|
| 1. Alder | 13. Maple |
| 2. Blackwood acacia | 14. Mexican elderberry |
| 3. Camphor tree | 15. Port Orford cedar |
| 4. Canary Island date palm | 16. Purple leaf plum |
| 5. Catalpa | 17. Red Horsechestnut |
| 6. Chinese pistache | 18. Siberian elm |
| 7. Corkscrew willow | 19. Sycamore |
| 8. Cutleaf birch | 20. Toyon |
| 9. Deodar cedar | 21. Victorian box |
| 10. Dracaena palm | 22. Walnut |
| 11. Fruit trees (apple, peach,
apricot, fig, lemon) | 23. Valley Oak |
| 12. Italian cypress | |

SECTION VII REFERENCES

Documents utilized or persons consulted:

1. Burt, H. B. and R. P. Grossenheider, 1964, A Field Guide to the Mammals, Houghton Mifflin Co., Boston.
2. California Department of Fish and Game, 1976, At the Crossroads, California Resources Agency, Sacramento.
3. East Bay Regional Park District, 1976, Martinez, Waterfront Land Use-Development Plan, Draft E.I.R., EBRPD Planning and Design Department, Oakland.
4. Ferrell, George, 1971, "Endangered Wildlife of California and the San Francisco Bay Region", Northern California Committee for Environmental Information, Berkeley.
5. Healey, Doug, Landscape Architect, Contra Costa County Public Works Department, Conversation.
6. Martinez Morning News-Gazette, April 17, 1976, "Centennial-Bicentennial Edition".
7. Mason, Herbert L., 1974, "Vegetation Inventory of the Lowlands and Marshes of the Martinez Shore Area", San Francisco Bay Marine Research Center, Inc.
8. Munz, P. A. and D. D. Keck, 1959, A California Flora, University of California Press, Berkeley.
9. Peterson, Roger Tory, 1969, A Field Guide to Western Birds, Houghton Mifflin Company, Boston.
10. Powell, W. Robert, ed., 1974, Inventory of Rare and Endangered Vascular Plants of California, California Native Plant Society, Berkeley.
11. Stebbins, Robert C., 1966, A Field Guide to Western Reptiles and Amphibians, Houghton Mifflin Co., Boston.
12. Sunset Magazine and Sunset Books, 1970, Sunset Western Garden Book, Lane Magazine & Book Co., Menlo Park.
13. U.S. Department of the Interior, Federal Register, 1975, "Threatened or Endangered Fauna or Flora", Part V, Fish and Wildlife Service, Washington, D.C.
14. U. S. Department of the Interior, Federal Register, 1974, "U.S. List of Endangered Fauna," Fish and Wildlife Service, Washington, D.C.
15. Werminski, John, 1972, (unpub.), "Educational Use Areas: A Vegetative Analysis, a Preliminary Report for the East Bay Municipal Utility District."



Chapter 9

ARCHAEOLOGICAL EVALUATION

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Peter Banks and David A. Fredrickson
Foundation for Educational Development, Inc.
California State College, Sonoma
September, 1976



TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	9-1
Summary of Major Findings	9-1
SCOPE OF SERVICES	9-2
METHODS AND RESULTS	9-3
Archaeological Significance of the Study Area	9-3
Results of Subsurface Investigation	9-5
Block 1	9-5
Block 2	9-8
Block 3	9-8
Block 4	9-10
Block 5	9-11
Block 6	9-11
CONCLUSIONS	9-12
REFERENCES	9-13

ILLUSTRATIONS AND TABLES

MAPS

Map 1: Subsurface Archaeological Survey of Project Site	9-7
---	-----

TABLES

Table 1: Block Identification Numbers	9-6
Table 2: Excavation Program, by Block	9-6
Table 3: General Soil Profiles of the Six Blocks	9-9

INTRODUCTION

In September 1976, the Contra Costa County Board of Supervisors authorized execution of a contract between the Supervisors and California State College, Sonoma Foundation for Educational Development, Inc. for the purpose of obtaining professional services necessary for the archaeological evaluation of the proposed site for the Contra Costa County Criminal Justice Detention Facility in Martinez, California. Data generated by the archaeological investigation were to be utilized as background for the Environmental Impact Report on the Facility. If significant archaeological resources were found to be present within the study area, alternative approaches to the construction of the Facility that would be compatible with the preservation of archaeological values were to be suggested. Measures to mitigate potential impact of the construction project upon archaeological resources were also to be recommended. The authors conducted the archaeological evaluation on behalf of the Foundation during September 1976. This paper constitutes a working draft report on the evaluation as called for by the contract.

Summary of Major Findings

The major findings of the archaeological investigation of the proposed Facility site were as follows:

- (1) A literature and records search revealed no indication of any previously recorded archaeological or ethnographic site within the study area or in its immediate vicinity. It was found, however, that the Karquin, a Costanoan-speaking people, reportedly had a major town near present-day Martinez in the pre-European period.
- (2) A thorough examination of all exposed ground surfaces within the study area yielded no evidence of archaeologically significant remains.
- (3) A subsurface sampling program that tested all portions of the project area yielded no evidence of archaeologically significant materials.
- (4) On the basis of available data, the authors conclude that no archaeologically significant remains are present within the project area. It follows, therefore, that no adverse impact upon archaeological resources would occur if the proposed Facility were constructed at that location. Since archaeological materials were absent from the proposed construction site, no alternative approaches to accomplish project goals and no mitigation measures need be recommended. It also follows that no materials eligible for nomination to the National Register of Historic Places were present within the project area.

SCOPE OF SERVICES

The following services were provided as part of the archaeological evaluation.

- (1) A literature and records search was made for data relevant to the archaeological significance of the project area. Both published and unpublished sources were examined as were archaeological records maintained by the Anthropology Laboratory, California State College, Sonoma. The Anthropology Laboratory serves as Regional Center for the California Archaeological Survey, a responsibility delegated by the State of California, Department of Parks and Recreation, and as such houses, maintains, and upgrades archaeological records and maps pertinent to a number of northern California counties, including Contra Costa County.
- (2) An examination was made of all exposed ground surfaces within the project area to determine whether materials of archaeological significance were present. The project area consisted of approximately 7.5 acres. Approximately 20% of this area was covered by paved streets and sidewalks, 10% was covered by buildings, and 50% was covered by paved parking areas. Thus, only about 20% of the total ground surface could be visually examined without modification to pavement or other features that were present within the project area.
- (3) A subsurface sampling program was initiated which utilized power auger supplemented by compressor and jackhammer to penetrate paved parking areas, back-hoe, and hand auger. A total of 87 test excavations were made to an average depth of 56 inches (1.4 meters) with a mean distance between excavations of approximately 55 feet (16.5 meters). In the authors' judgement, the sampling program provided sufficient information to allow accurate generalizations regarding the entire parcel.

METHODS AND RESULTS

Archaeological Significance of the Study Area

Although no evidence of archaeological resources was discovered within the proposed Facility site during the field study, the literature and records search revealed that the general area was home to the Karquin, a Costanoan-speaking people, during the period of initial European contact (Cook 1957; Bennyhoff 1961). Because the area south of Carquinez Strait and Suisun Bay had been depopulated by 1810 due to Spanish missionizing efforts, some difficulty was experienced by later scholars who attempted to reconstruct the contact period cultural relationships. On the basis of an analysis of mission records and other historical documents as part of his study of the Plains Miwok, Bennyhoff (1961:219ff) was able to place the Karquin as residing in the Martinez area.

While a number of archaeological investigations have been conducted in the region from Concord to Danville (e.g., Lillard, Heizer and Fenenga 1939; Fredrickson 1966, 1968, 1975), no similar work has been carried out in Karquin territory. Until further data are available, however, it can be assumed that the prehistory of the Martinez area will be found to parallel the sequence of archaeological cultures identified in the interior portion of Contra Costa County.

The earliest human occupation documented for what is now Contra Costa County was about 4,000 years ago at CCo-308 in Alamo. This date corresponds to the earliest portion of what is known in central California as the Middle Horizon, or Berkeley Pattern, which lasted until about 1,500 years ago. In the interior region of Contra Costa County, the economy of the early inhabitants was based upon the hunting of local game, most importantly the deer, and the collecting of local plant food, most notably the acorn. The primary hunting weapon was the dart, tipped with a relatively large stone projectile point and propelled with the aid of a throwing stick or atlatl. Projectile points, spear points, and chipped stone knives, all of which were comparatively rare, were manufactured from a variety of materials in a variety of shapes and appear for the most part to have been made from locally available materials or imported ready-made from non-local stone. Although trade relationships were clearly well established at this time, the social group did not appear to have been heavily dependent upon exchanges or imported goods.

Prior to the close of the Middle Horizon, for reasons as yet unknown, the influence of the northern San Joaquin Valley was strongly felt in interior Contra Costa County, as evidenced by radical changes in mortuary practices and artifact types. The San Joaquin influence may have been the result of population shifts, with the earlier peoples replaced by an expanding population from the interior. Although not documented for Karquin territory and the Martinez area, the expansion

almost certainly included this region, since the cultural replacement has been documented at Concord and El Sobrante.

During the transition from the Middle Horizon to the Late Horizon, i.e., from the Berkeley Pattern to the Augustine Pattern, another shift in mortuary practices took place, artifact styles changed, the first evidence of a group-oriented religious movement occurred, and economic patterns shifted. New exchange relationships appear to have been established at this time, with chipped stone tools, for example, manufactured almost exclusively from Napa Valley obsidian.

During the Late Horizon proper, Napa Valley obsidian continued to be favored for the manufacture of chipped stone tools, but it was now imported as raw material rather than in the form of finished product. The bow and arrow was introduced and eventually replaced the dart and atlatl. Cremation as a burial mode was introduced and became increasingly important over time. While initially reserved for the wealthy, cremation came to be the dominant mode for disposal of the dead with only those who were poor or who had no relatives buried without cremation (Kroeber 1925:469).

Increasing numbers of beads and ornaments, including those made from clam shell, olivella shell, abalone shell, steatite, and magnesite, became available during the Late Horizon, suggesting that greater quantities of wealth were coming into the area and that social complexity was greater than during the preceding Middle Horizon.

Initial European contact with Karquin territory occurred in 1772 when a Spanish expedition headed by Pedro Fages followed the south shore of Carquinez Strait and Suisin Bay, afterward passing through the Concord and San Ramon Valleys on the return journey to Monterey. The first recorded Karquin baptism at Mission Dolores occurred in 1787. The last Karquin baptism was recorded in 1810 and by this time the Karquin area appeared to have completely lost its native population (Bennyhoff 1961:219ff).

The Spanish period for the Martinez area, then, began about 1787 with the initial Karquin baptism and ended in 1821, the date Mexico became independent of Spain. Although there is little evidence of Spanish development within the Martinez area, and no sites of the Spanish period are recorded in the California Inventory or Historic Places or entered on the National Register of Historic Places, there is some possibility that cultural resources from this period are present and might be discovered if field survey were conducted.

The Mexican period dates between 1822 and 1848. During this period land grants were made to Mexican nationals and naturalized, Catholicized foreigners. Unclaimed land was generally used for open pasture. There is thus reason to believe that cultural resources dating from the Mexican period are present within the general Martinez area and might be iden-

tified if field survey were conducted. The American period, which followed the Mexican period, is amply represented by sites listed on the California Inventory of Historic Places. Additional sites, not yet listed on the Inventory probably exist within the Martinez area.

Results of Subsurface Investigation

For the purpose of this investigation, the proposed Facility site was divided into six blocks, numbered from 1 through 6 (see Map 1). Block identification numbers are listed on Table 1. The number of excavations, mode of excavation, and depth reached are listed on Table 2.

The general procedure for the subsurface archaeological survey was the excavation of exploratory trenches or holes spaced approximately 50 feet apart. The English measurement system was employed rather than the metric because the city blocks and their respective house lots had been measured by this system. Subsurface samples were excavated with either a back hoe that had a two foot bucket, a power auger with a twelve inch bore, a hand auger with a three inch bore, or pick and shovel. In all, a total of 87 exploratory holes or trenches were excavated within the six block area. Specific procedures and the number of holes excavated within each block are discussed below. In order to insure that smaller objects might not be missed, the soil from one hole out of every four was screened through one-quarter inch mesh.

Block 1

Block 1 actually comprised only the eastern half of the block bordered to the east by Pine Street, to the south by Green Street, to the west by Court Street, and to the north by Ward Street. The Martinez Post Office was situated on the western half of the block. The area that was investigated measured approximately 100 ft. by 200 ft. and at the time of the investigation was used as designated parking lot. The area was marked with parking stripes and parking bars and was landscaped.

The parking lot was covered by asphalt pavement which rested on the top of approximately 18 inches of sand and gravel fill. A jackhammer and compressor were employed initially to open the asphalt pavement. A power auger was then used to excavate the exploratory holes. This procedure was developed in order to minimize disturbance to the landscaped parking lot. Eight holes, drilled to an average depth of six feet, were placed in two rows of four each with an interval of approximately 50 feet between the holes in each row and an interval of approximately 65 feet between rows. The holes were backfilled with hand tools and a mechanical compactor was used to tamp the soil in these holes.

The general soil profile of Block 1 was: 18" of recent asphalt pavement that topped sand and gravel fill; 24-30" of a compact, very dark brown to dark brown clay. The clay contained occasional brick and

Table 1

BLOCK IDENTIFICATION NUMBERS

Block No.	Boundaries:			
	West	North	East	South
1	Court Street	Ward Street	Pine Street	Green Street
2	Court Street	Green Street	Pine Street	Thompson Street
3	Court Street	Thompson Street	Pine Street	Mellus Street
4	Pine Street	Ward Street	Willow Street	Green Street
5	Pine Street	Green Street	Willow Street	Thompson Street
6	Pine Street	Thompson Street	Willow Street	Mellus Street

Table 2

EXCAVATION PROGRAM, BY BLOCK

Block No.	Samples	Average Depth	Mode of Excavation
1	8	72 inches	power auger
2	16	72 inches	power auger
3	12	48 inches	back hoe
4	19	72 inches	power auger
	4	48 inches	back hoe
	1	26 inches	hand auger
5	14	48 inches	back hoe
	3	24 inches	hand auger
6	2	36 inches	hand auger
	8	24 inches	pick and shovel

concrete fragments. Below the dark brown clay was a less compact, red-brown to yellow-brown silty clay. See Table 3 for soil profiles of the six blocks.

Block 1 contained no prehistoric archaeological materials and only occasional historic material. No significant archaeological resources were identified.

Block 2

Block 2 was an approximately 200 ft. square block that was bordered to the east by Pine Street, to the south by Thompson Street, to the west by Court Street, and to the north by Green Street. At the time of the investigation, the entire block was employed as a formal parking lot for county employees. The lot was marked with parking stripes and parking bars and was landscaped. The lot was covered with an asphalt pavement that covered approximately 18" of sand and gravel fill.

A jackhammer and compressor were initially utilized to open the asphalt pavement. A power auger was then employed to excavate the exploratory holes. Sixteen holes were drilled to an average depth of six feet, at intervals of approximately 50 feet. The holes were backfilled with hand tools and a motorized compactor was used to tamp soil back into the holes.

The general soil profile of Block 2 was: 30 inches of recent asphalt pavement covering sand and gravel fill; 30 to 54 inches of compact, black clay; a less compact, gray-brown to yellow-brown, silty clay. The black clay was thickest in the southeast portion of the block.

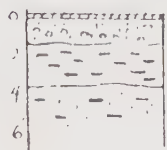
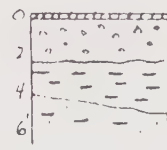
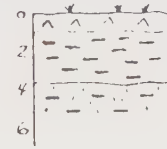
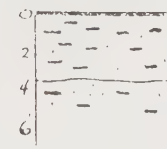
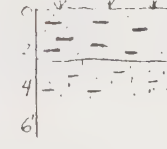
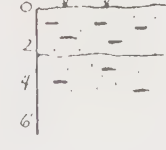
Block 2 contained no prehistoric archaeological material. A single hole, located 100 feet west of the southeast corner of the block, contained sufficient historic material to warrant comment. Analysis of the soil from the twelve inch diameter, six foot deep auger hole (see "A" on Map 1) revealed two bottle fragments that possibly dated to the 19th century, a fragment of a cut glass tumbler, several iron nails and hooks, and fragments of brick and coal. Soil, however, was indistinguishable from soil from other auger holes within the block, none of which contained historic materials. The historic refuse from the auger hole did not occur in sufficient quantity or distinctive enough association to warrant special precautions.

Block 3

Block 3 was an approximately 200 foot square block that was bordered to the east by Pine Street, to the south by Mellus Street, to the west by Court Street, and to the north by Thompson Street. At the time of the investigation, the northern 60 feet of the lot was privately owned and therefore was not investigated. The southern 140 feet was clear

Table 3

GENERAL SOIL PROFILES OF THE SIX BLOCKS

Block No.	General Soil Profile	
1		<p>Asphalt Pavement Sand + Gravel Fill Dark Brown Clay Yellow Brown Silty Clay</p>
2		<p>Asphalt Pavement Sand + Gravel Fill Black Clay Yellow Brown Silty Clay</p>
3		<p>Topsoil Zone Black Clay Yellow Brown Silty Clay</p>
4		<p>Black-Top Gravel Dark Brown Clay to Silt Yellow Brown Clayey Silt</p>
5		<p>Dark Brown clay to Silt Yellow Brown Clayey Silt</p>
6		<p>Dark Brown Silty Clay Yellow Brown Clayey Silt</p>

of all buildings and bare ground was exposed. A back hoe was utilized to excavate 12 trenches to an average depth of four feet, at 50 foot intervals. The back hoe was employed rather than an auger because, since pavement was lacking, no damage would be done to landscaped parking areas. The back hoe trench was preferred because a trench afforded viewing conditions less obscured than an auger hole.

The general soil profile for Block 3 was: 12" of moderately compact, dark brown silty clay; 30" to 42" of very compact, black clay; a grey-brown to yellow-brown silty clay. The black clay was thickest at the southern end of the block.

Block 3 contained no prehistoric archaeological remains and only occasional historic material. No significant archaeological resources were identified.

Block 4

Block 4 was an approximately 310 ft. by 200 ft. rectangular block that was bordered to the east by an unnamed lane that was an extension of Willow Street, to the south by Green Street, to the west by Pine Street, and to the south by Ward Street. An offset extension of Willow Street split the block. To the west of the offset Willow Street was a 200 ft. square block that was used as an unmarked, informal parking lot at the time of the present investigation. The lot was covered by a thin layer of oiled gravel.

A power auger was used to excavate the holes in this block. Use of the auger rather than the back hoe, minimized surface disturbance of the oiled paving. Nineteen holes were drilled to an average depth of 6 feet, at intervals of approximately 50 feet. The holes were backfilled with hand tools.

East of Willow Street and north of Green Street was an approximately 110 ft. by 100 ft. formal parking lot with asphalt pavement, parking stripes, parking bars, and landscaping. In this area four back hoe trenches were excavated after asphalt was removed using jackhammer and compressor. The trenches were excavated to an average depth of four feet at intervals of about 50 feet.

Two county-owned houses were also in this block: 1200 Ward and 1214 Ward. A hand auger was utilized to excavate a 26 inch deep hole on the 1214 Ward property. The soil was too compact to allow the hand auger to penetrate below 26 inches.

The general soil profile for Block 4 was: 6" to 12" of recent gravel fill; 36" to 48" of compact, dark brown clay which became more friable and silty to the upslope east; a compact, grey-brown to yellow-brown silty clay.

Block 4 contained no prehistorical archaeological material and virtually no historic remains. The block did not contain significant archaeological resources.

Block 5

Block 5 was an approximately 310 ft. by 200 ft. rectangular block that was bordered to the east by Willow Street, to the south by Thompson Street, to the west by Pine Street, and to the north by Green Street. A 50 ft. by 100 ft. lot at the corner of Pine and Thompson was privately owned. Two county owned houses were located at the corner of Willow and Green and Willow and Thompson, respectively. Each house was on an 80 ft. by 100 ft. lot. The remainder of the block had been cleared and the ground surface was bare. Fourteen back hoe trenches were excavated in the cleared area at intervals of approximately 50 feet. The holes averaged 4 ft. in depth. At the county-owned houses, i.e., 1157 Thompson Street and 1152 Green Street, a total of three holes were excavated by hand auger to an average depth of 2 ft. Because of the compact soil, the hand auger could not penetrate below two feet.

The general soil profile for Block 5 was: approximately 36 inches of compact, dark brown silty clay that became more friable and silty toward the upslope eastern portion of the block; a moderately compact, grey to yellow-brown clayey silt.

Block 5 contained no prehistoric archaeological materials and rare historic material. The block did not contain significant archaeological resources.

Block 6

Block 6 was an approximately 310 ft. by 200 ft. rectangular block that was bordered to the east by Willow Street, to the south by Mellus Street, to the west by Pine Street, and to the north by Thompson Street. The block was fully occupied by 13 residences, all but two of which were owned by the county. The privately owned homes were at 1025 Pine Street and 1020 Willow Street. Ten holes were excavated in the yards of the county-owned houses. Because of the extreme compactness of the soil, a hand auger was ineffectual and holes had to be excavated with pick and shovel. The holes were excavated to an average depth of approximately two feet. At 1142 Thompson Street the auger penetrated to a depth of three feet.

The general soil profile of Block 6 was similar to that of the other blocks: a compact, dark brown clay of more than 24 inches depth in the western part of the block, becoming more friable and more silty toward the upslope east; below 36 inches, the yellow-brown silty clay to clayey silt was found only at the deep hole at 1142 Thompson Street.

Block 6 contained no prehistoric archaeological material and very little historic material. No significant archaeological resources were present in the block.

CONCLUSIONS

Excavation of 87 test holes using power auger, hand auger, back hoe, and pick and shovel within the 7.5 acre, six block site of the proposed Contra Costa County Criminal Justice Detention Facility in Martinez, California, yielded no prehistoric archaeological remains and only sporadic historic materials. It can be reasonably concluded that the parcel contained no significant archaeological or historic features.

Since no archaeological or historic references occurred within the parcel, no alternatives for development of the Detention Facility need be suggested and no mitigation measures are required.

REFERENCES

- Bennyhoff, J. A.
1961 Ethnogeography of the Plains Miwok. Unpublished doctoral dissertation, University of California, Berkeley.
- Cook, S. F.
1957 The Aboriginal Population of Alameda and Contra Costa Counties, California. University of California, Anthropological Records 16(4).
- Fredrickson, D. A.
1966 CCo-308: The Archaeology of a Middle Horizon Site in Interior Contra Costa County, California. Unpublished master's thesis, University of California, Davis.
- Fredrickson, D. A.
1968 Archaeological Investigations at CCo-30 near Alamo, Contra Costa County, California. Center for Archaeological Research at Davis, Publication 1.
- Fredrickson, D. A.
1975 Archaeological Investigations at CCo-352, Danville, Contra Costa County, California. A report submitted to the Contra Costa County Planning Department.
- Kroeber, A. L.
1925 Handbook of the Indians of California. Bureau of American Ethnology, Bulletin 78.
- Lillard, J. B., R. F. Heizer, and F. Fenenga
1939 An Introduction to the Archaeology of Central California. Sacramento Junior College, Bulletin 2.

Chapter 10

HISTORICAL RESOURCES

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Planning Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION AND FINDING	10-1
PROJECT AREA HISTORY	10-1
Era of the Ranchos	10-1
Anglo Era	10-5
Contra Costa County - Martinez as a County Seat	10-6
Development of Martinez	10-8
HISTORIC SITES AND STRUCTURES OF THE MARTINEZ AREA	10-11

ILLUSTRATIONS AND TABLES

MAPS

Map 1: Ranchos in Contra Costa County	10-3
Map 2: Historic Boundaries of Contra Costa County	10-7
Map 3: Historic Sites and Structures of the Martinez Area	10-14

TABLES

Table 1: Rancho Ownership	10-4
---------------------------	------

INTRODUCTION AND FINDING

California guidelines for the preparation of Environmental Impact Reports indicate that EIR's should evaluate the impacts of projects on historic resources. For the Contra Costa County Detention Facility project, County staff reviewed a previously prepared County inventory and performed additional library research.* No historic buildings or sites were found to be present on the project site, and none of the historic locations in Martinez was determined to be affected by the proposed project.

This report contains a brief history of the project area from the time of European settlement, and a listing of the historic resources in the older portion of the City of Martinez. The history complements the discussion of the area's pre-history in the preceeding chapter (Archaeological Evaluation, Chapter 9). The historical description begins with the change in land ownership from the government (Mexican) to private individuals at the start of the period of settlement.

PROJECT AREA HISTORY

Era of the Ranchos

In California, the granting of ranches to private ownership had occurred as early as 1784 under Spanish rule. In the intervening years the number of land grants remained small for two reasons: (1) California had remained a frontier area of Spanish culture and therefore did not look too inviting to prospective settlers; (2) more important, the choice lands, especially along the mapped routes, were held in trust by the Franciscans for the Indians and thus were not available.

Secularization of the mission lands brought about a rapid increase in land grants. Between 1834 and 1846, Mexican governors confirmed at least 600 private rancho grants. When the United States acquired California, most of the suitable land up to the Sacramento Valley was privately owned.

In applying for a land grant under Mexican law, the petitioner stated that he was a native-born or naturalized Mexican citizen; set forth the location, boundaries, approximate size, and identifying landmarks of the desired tract; testified that none of the land in question had been granted in a previous concession; declared that he was prepared to stock the holdings with a number of horses and cattle; listed the names of the neighboring ranchos; and supplied a diseno or rough topographical map of the property. The petition and diseno were placed in a file in the provincial archives.

*Source: Preliminary Historic Resources Inventory, Contra Costa County; Contra Costa County Planning Department, 1976.

In Contra Costa, approximately 16 ranchos were granted by the Mexican government between 1823 and 1844. The reasons for the uncertainty of numbers include the lack of knowledge of the procedures involved in granting documentary title to land, inconsistencies and disputes in boundaries, partial acquisitions and the frequent change in Mexican governors. What is known is that it was the governor's absolute right to grant titles to land. Between 1822 and 1846 there were 14 Mexican governors; each had the "absolute" right to grant land.

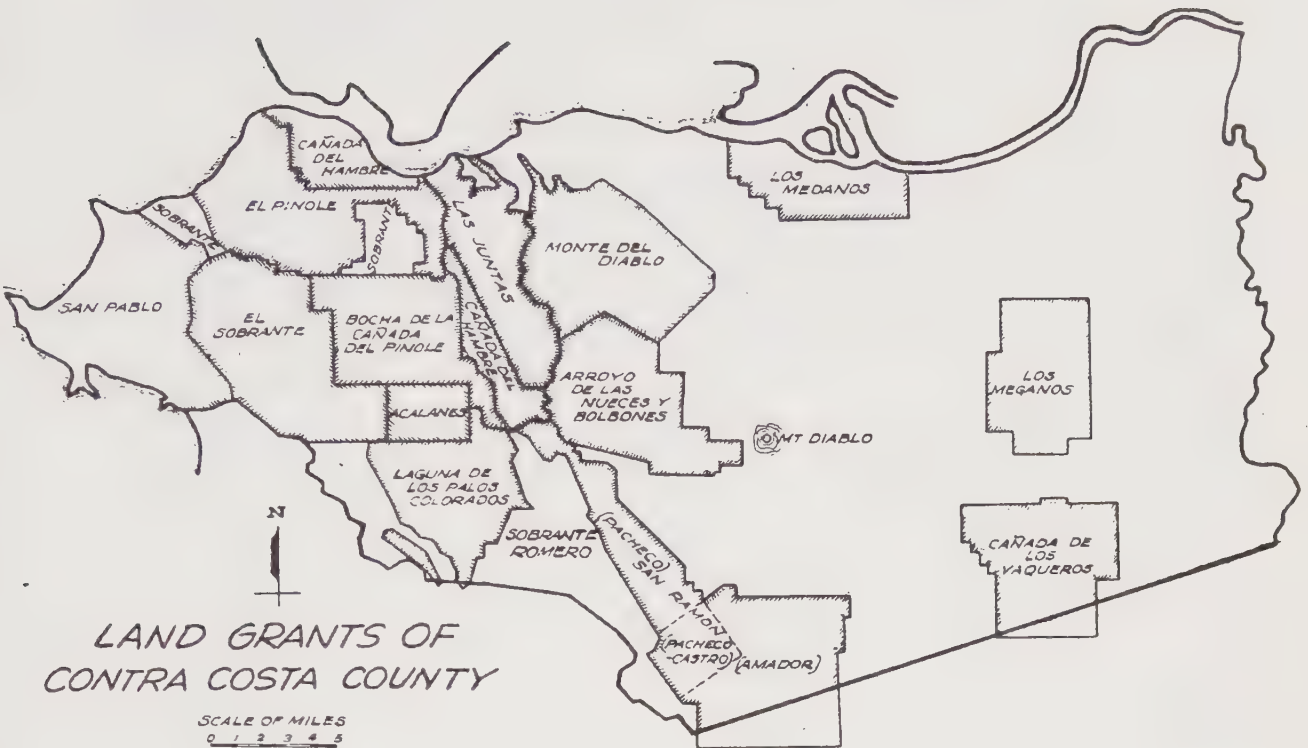
The first ranchos in Contra Costa were Rancho San Pablo, granted to Don Francisco Maria Castro in 1823, and Rancho el Pinole, granted to Don Ignacio Martinez later the same year. Although both owners stocked their lands with cattle and built homes and other buildings of adobe, the frequent change in governors led to confusion in titles. Neither Castro nor Martinez had their possessions legally acknowledged and confirmed until 1834 and 1842, respectively. Table 1 and Map I summarize information about the other Mexican land grants in Contra Costa. Apparently, all but one of the grants, Rancho las Juntas, were granted to Spanish Californians. Six other ranchos were either partially or entirely sold to Americans (or other anglos) prior to the American takeover of California in 1846.

After the annexation of California by the United States and the inclusion of California as a state, Congress passed an Act in 1851 which established a Land Commission to settle all private land claims in the new State. Most of the rancheros in Contra Costa held undisputed titles to their lands. On the other hand the Castros of Rancho el Sobrante and the Romeros of the Sobrante Romero Rancho found their titles challenged and denied by the U.S. courts, and they lost lands and homes that had been theirs for many years. Several of the ranchos, most notably Rancho San Pablo and Rancho Laguna de los Palos Colorados, were involved in long disputes and litigation among heirs and/or American squatters. When the first American settlers came to Contra Costa, the size and location of the land grants left very little available land that they believed was fit for cultivation. There was little or no selling or buying of property. Some of the Americans became squatters, to the intense annoyance of the rancheros. Squatters' claims and fights in conjunction with partition suits instituted by heirs of the rancho families retarded the growth and development of the county for many years.

The City of Martinez is located within the former boundaries of Rancho las Juntas and Rancho el Pinole. The channel of Alhambra Creek was the dividing line between the two. The proposed Contra Costa County Detention Facility lies to the east of Alhambra Creek, and as such is located within the former Rancho las Juntas.

In 1850, after a townsite had been laid out on the west banks of Arroyo del Hambre creek by Colonel Smith for the Martinez family, Thomas A. Brown, who had surveyed the location, was employed to survey an addi-

Map I
Ranchos in Contra Costa County



Source: History of Contra Costa County; Purcell, 1940

Table 1
Rancho Ownership

<u>Rancho</u>	<u>Year of Legal Grant, Grantee</u>	<u>Interim Owners</u>	<u>Claimant to U.S. Land Commission; Confirmation Year</u>
1. Acalanes	1834; Candelano Valencia	William Leidesdorff; Elam Brown	Elam Brown; 1853
2. Arroyo de las Nueces y Bolbones	1834; Dona Juana Sanchez de Pacheco		Heirs of Dona Pacheco; 1852
3. Boca de la Canada del Pinole	Dona Maria Manuela 1842; M.M. Valencia de Briones		M.M. Valencia de Briones, 1854 (District Court)
4. Canada del Hambre and Las Bolsas del Hambre	1842; Dona Teodora de Soto	General M.G. Vallejo and John B. Frisbie (portion)	Dona Teodora de Soto; 1855
5. Canada de los Vaqueros	1844; Francisco Alviso, et al	Robert Livermore	Robert Livermore; 1855
6. El Pinole	1842; Don Ignacio Martinez		Maria Antonio Martinez de Richardson et al; 1854
7. El Sobrante	1841; Juan Jose & Victor Castro	Horace C. Carpentier(illegal)	H. W. Carpentier, rejected 1855-6
Sobrante	1844; Luis Peralta	Horace C. Carpentier(illegal)	
Sobrante Romero	1844; Inocencio Romero		Inocencio Romero et al, rejected 1855-7
8. Laguna de los Palos Colorados	1841; Joaquin Moraga & Juan Bernal	Joaquin Moraga	Joaquin Moraga; 1855
9. Las Juntas	1844; William Welch		Joseph Swanson (Welch's administrator; 1853)
10. Los Medanos	1839; Jose Antonio Mesa et al	Jonathan D. Stevenson	J. D. Stevenson et al; 1855
11. Los Meganos	1835; Jose Noriega	John Marsh	John Marsh; 1858 (District Court)
12. Monte del Diablo	1834; Don Salvio Pacheco		Don Salvio Pacheco, 1853
13. San Pablo	1834; heirs of Don Francisco Castro		Heirs of Don Castro; 1855
14. San Ramon (Pacheco)	1833; Dona Rafaela Soto de Pacheco		Dona Pacheco, 1858 (District Court)
San Ramon (Pacheco-Castro)	1833; Bartolo Pacheco & Mariano Castro	Domingo Peralta	Domingo Peralta 1855
San Ramon (Amador)	1834; Jose Maria Amador	Leo Norris	Leo Norris; 1854

tion on the east banks of the same creek, which was part of Rancho las Juntas. Many of the homes of the first residents of Martinez were built on this addition and half of the present population resides on the east side of Alhambra Creek, which bisects the town, and which was part of Rancho las Juntas.

Anglo Era

At the time Col. Smith laid out the townsite of Martinez, a number of settlers were already in the locality. Elam Brown, Nathaniel Jones and others had brought their families and were pioneering in the area of Lafayette (Rancho Acalanes). Miners on their way to the newly discovered gold fields in the Sierra Nevada made the location a stopping place. Dr. Robert "Doc" Semple, a founder of Benecia and member of the Bear Flag party in 1846, was operating a primitive ferry to and from Benecia.

Interest in California had been aroused in the United States when, after the Mexicans allowed foreign trade, ships returned to the east coast with hides and tallow. The overland route had been opened by trappers and scouts as early as 1826. Liberal colonization laws passed by the Mexican government in 1824 allowed large numbers of American adventurers and settlers to come into the area year by year. The future of Contra Costa was influenced by the discovery of gold in 1848.

Conflicts among the various Mexican and native Californians, as well as the strong jealousy between northern and southern California, made the possession extremely vulnerable to takeover. Fear of American "invaders" had led to a series of incarcerations and deportations of foreigners during the administration of Governor Juan Bautista Alvarado (1836-42). On June 14, 1846, a group of pioneer settlers, fearing another expulsion by Mexican authorities, declared the Bear Flag Republic. A month prior, unknown to the settlers, the U.S. had declared war on Mexico over other disputes in the Southwest. Apparently, when Commodore John D. Sloat declared California a U.S. republic on July 7, even he was unaware of the declaration of war.

At the close of the war in 1848 California was virtually without a government. Such as did exist, was partly military, partly civil, and with Mexican laws still in effect. When Brigadier-General Bennett Riley assumed the governorship in 1849, he acceded to the popular demand to form a state. After an election of delegates the Constitutional Convention met at Monterey after which a constitution was ratified and state officers were elected by the people on November 13, 1849. There was at this time an estimated population of 107,000 in California: 76,000 Americans, 18,000 foreigners, and 13,000 native Californians. Persons **casting** votes for the constitution numbered 12,875 and 811 voted against it. Martinez cast a total of 41 votes. California was a self-constituted state with an organized state government for 10 months before it was admitted to the Union September 9, 1850.

Contra Costa County - Martinez As A County Seat

During the interim government at the end of the war the military governors appointed alcaldes, prefects and sub-prefects throughout the state. Their duties roughly correspond to mayors, magistrates and police officers. Elam Brown, founder of Lafayette, and Napoleon B. Smith were made alcalde and sub-prefect of their district, respectively. Brown was later one of the delegates to the Constitutional Convention, and was elected assemblyman in the November, 1849 election.

As mandated by the constitution, the first legislature passed an act on February 18, 1850 which subdivided the state into 27 counties and established seats of justice within them. Contra Costa was one of these counties. Martinez was declared the County Seat. The first boundaries of the county included much of what is now Alameda County. The existing boundary was established on March 25, 1853 during the fourth legislative session at Benecia (See Map 2).

Prior to the establishment of the County, the town of Martinez consisted of three or four stores, a hotel, a blacksmith shop, a few small residences, and several saloons. When Col. Smith laid out the town he had hired Thomas Brown, Elam's son, to survey 120 acres into blocks 200 feet square, with town lots 50 feet wide and 100 feet deep. The cost of the survey was \$2500 some of which were paid in lots; Thomas Brown, his brother Warren, and their brother-in-law N.B. Smith, opened one of the first stores. The block bordered by Smith (now Alhambra Ave.), Castro, Henrietta and Susanna Streets was reserved as a Plaza. The land immediately bordering the creek was not included in the original survey and was called the "Carquinez Reserve." The first lots were sold for \$100 each. Most commercial development was in the area of Smith, Rudeu (now Main), and Berrellessa Streets, and to the north toward the mouth of the Arroyo del Hambre, where Semple's ferry landed.

Establishing Martinez as the county seat encouraged the rapid development of the town. Many lots were sold to land speculators from San Francisco. Shortly after the legislative session the widow of William Welch of Rancho las Juntas hired Thomas Brown to survey an addition to the town on the east side of the creek. As the county seat it began to attract many substantial business and professional men. Within a year Martinez had more than doubled in size.

The first county officials were elected in a general election in April, 1850. A total of 266 votes were cast, 63 in Martinez. Other precincts and their votes were New York (Pittsburg) (133), Moraga Redwoods (Canyon, Moraga) (19), and San Antonio (Oakland) (51). F. M. Warmcastle was elected County Judge, the presiding officer of the Court of Sessions. This body conducted all county civil business until the board of supervisors was created in 1852 and was in existence as a court until a new state constitution was adopted in 1879 which changed the judicial system.

Map 2 Historic Boundaries of Contra Costa County



Top, left: County boundaries in 1850. Right: Legislature changed east line in 1851. Locations are historic spots. Bottom: 1853 Alameda county formed out of Contra Costa and Santa Clara, causing reestablishment of boundary

"The first public building was a stone jail which was built in (June) 1850 on the west bank of the creek in Martinez at the bridge on the street leading back from the wharf", wrote Judge Thomas Brown in later years. "For the purpose for which it was intended the building was a poor affair, but by carefully guarding the prisoners, some of them were detained until they were tried", he continued.

County business, along with school classes, church services and meetings, was conducted in Berryessa Adobe* at Smith and Escobar Streets until 1855, when a court house and jail (in the basement) were constructed on a hill fronting the straits. The architectural style was very similar to the present finance building although considerably smaller, and stood slightly west of the present building. (Note: the existing Finance Building served as the court house until 1957, when the two buildings exchanged services. The building had a large dome until 1956, when it was removed for reasons of safety; the first courthouse also lacked a dome.) A large earthquake in October, 1868 badly damaged the old courthouse, and extensive repairs became necessary. With all the effort the building was never as safe as it had been, and it continued for years to be a constant source of worry to county officials. It was not until 1901 that a new courthouse was begun. By the time of completion two years later, costs totalled \$338,383.

Development of Martinez

Shortly after the County Courthouse was constructed, Martinez incorporated; the initial attempt to incorporate came in 1856 with actual incorporation following 20 years later in 1876. During this period, and the succeeding years to the turn of the century, Martinez grew as a trade center with various businesses utilizing the port.

During the 1850's and 1860's Contra Costa County prospered as an agricultural region and Martinez became a focal point in this development. In 1853 Dr. John Strenzel established the first muscat vineyards and fruit tree orchards on his property in Alhambra Valley. By 1875 the Contra Costa Gazette, established in Martinez in 1867, reported that "Today the whole face of the arable part of our county is one waving field of grain." This indicated the growing importance of wheat as an agricultural product. Located near Martinez along the Carquinez Straits, were 23 warehouses storing wheat and other agricultural produce. In 1867 a flour mill was established in Martinez to mill the wheat and in 1876 Grangers' Warehousing and the Business Association of Contra Costa County located warehouses in Martinez. The intention was to develop Martinez as an extensive shipping port. While these latter plans never

*Jose de los Santos Berryessa was son-in-law of Francisco Martinez, the grantee of Rancho Pinole.

materialized, the Martinez port grew from the 1870's to the turn of the century as a salmon fishing and canning center. Two such canneries were established in Martinez, and by 1900, over 200 boats operated in the Carquinez Straits.

Other business expansion in Martinez during this period included the discovery in 1862 of paint deposits on the bank of Alhambra Creek and the setting up of grinding machinery for a short time; the relocation of one Bank of Martinez, from Pacheco, in 1873; and the use of Martinez as a stop for the Pony Express, the State & Freight Lines, and the Central Pacific Railroad.

With the turn of the century, industry began to move into Martinez. In 1914, Shell Oil of California moved into Martinez along with the Tidewater Oil Company at Avon. In 1915, besides Shell Oil Company and Tidewater Oil Company, located in Martinez were also the Mountain Copper Company, the American Oriental Company, and the Alhambra Municipal Water Company. The 1920's brought rapid population growth from immigration, which was experienced throughout the United States. By the 1930's, population in Martinez had grown by 69%. In the 1940's, however, population growth increased by only 12% and had begun to locate in Alhambra Valley and Vine Hill. During these two decades business in Martinez only increased by 30%. During the 1950's and 1960's commercial development slackened (decreases in business continued) in Martinez. In this period two commercial enterprises located in Martinez for 25 years closed and moved to the Central County region, Montgomery Wards and J. C. Penny Co. and the theatre closed. In 1957, commercial fishing was forbidden between Pittsburg and the Carquinez Bridge, thereby ending the commercial fishing industry in Martinez.

At the time both business and population growth began to decline within Martinez, County government began its expansion. In 1932, the Hall of Records was constructed; in 1954 the Administration Building (now the North Wing) was built; in 1956 the Dome was removed from the Courthouse and it was remodelled. At this time the Courthouse became the present Finance Building and the Hall of Records became the Courthouse. In 1956 the County also built the County Hospital on Alhambra Avenue. In 1957 the Public Health Department Building was constructed and the County presented a 15 year plan for construction of other county buildings within the City of Martinez. This plan was modified and in 1963 became the Civic Center Plan (see Chapter 19). In 1963 the 12-story Administration Building was constructed in Martinez as part of the first phase of the Civic Center plan.

With the decline of commercial enterprises over the years since 1940 and the expansion of county buildings, the City of Martinez has experienced a marked change in its residential nature. Martinez began this century as one of the largest cities in the county, but declined as other cities in the county grew. Between 1960 and 1975, however, Martinez has had a resurgence in population. The population has almost doubled from 9,604 to 18,702 in the last 15 years, but this has occurred largely due

to the annexation of Vine Hill and Mountain View, over one-half of the city's population, and is located in suburban neighborhoods in the southern part of the city south of Highway 4.

As a result, Martinez, once a commercial port, has developed into two distinct areas: the old, industrially oriented city to the north, and the expanding, suburban community to the south.

A recent "Preliminary Historic Resources Inventory", prepared by the County Planning Department in 1976, recognizes a number of historic structures in the Martinez area. None of these are within the site of the proposed Detention Facility. A list of these historic resources and an accompanying map (Map 3), is attached to this report.

HISTORIC SITES AND STRUCTURES OF THE MARTINEZ AREA

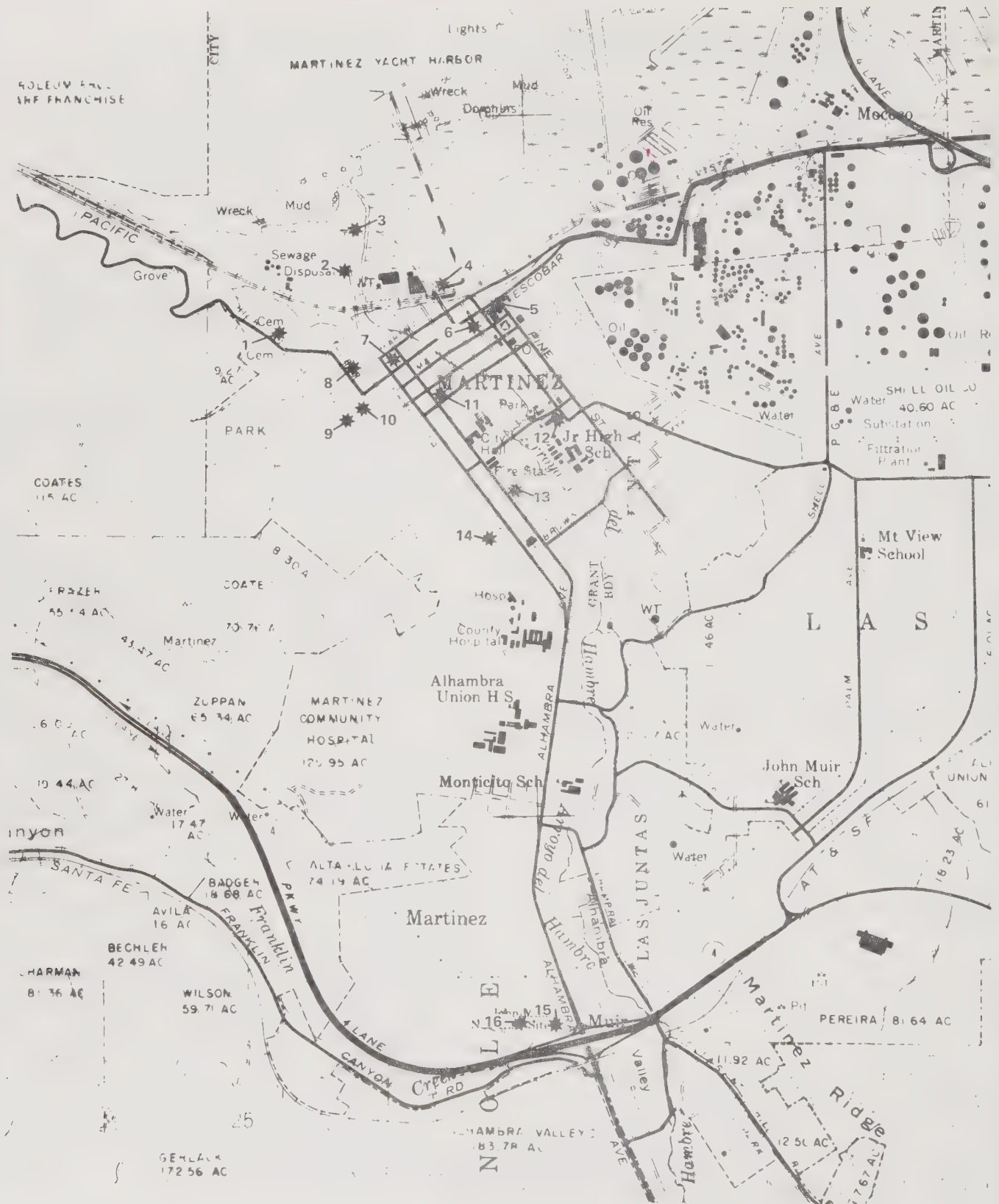
<u>RESOURCE/LOCATION</u>	<u>EVALUATION CATEGORY</u>	<u>SIGNIFICANCE/IMPORTANCE</u>
1 MARTINEZ CEMETERIES Carquinez Scenic Drive West of Martinez	<u>Site</u> Relating to Important Person in History	Earliest burial ground in the County. Many notable pioneers, including Salvio Pacheco, Fernando Pacheco, the Martinez family, Joseph Reddeford Walker and Elam Brown, are interred here. Catholic Cemetery is on south side of road and Protestant on the north.
2 GRANGERS WHARF Martinez Waterfront	<u>Site</u> of Historic Event	In 1876, the wheat and fruit growers built a wharf for handling their shipments. It was also the site of an Italian fishing port. Some original pilings still remain along with evidence of washing tanks for fishnets.
3 MARTINEZ-BENECIA FERRY LANDING Foot of Berrellesa Street on Car- quinez Strait	<u>Site</u> of Historic Event	Site of original ferry crossing established by Robert Semple of Benicia in 1847. It was a principal crossing for 49ers on their way to the mining areas. When the shoreline silted up, the landing for the ferry was shifted east to what became Ferry Street. In 1860, the first west bound pony express rider crossed here enroute to Oakland.
4 SOUTHERN PACIFIC RAILROAD DEPOT	Structure of Historic Significance	Circa 1876, work started on the railroad and on September 25, 1877 the first passenger train with Leland Stanford aboard went through Martinez.
5 COUNTY COURTHOUSE Main and Court Streets	<u>Site</u> of Historic Event	Original courthouse for Contra Costa County was built in 1855. It faced Escobar Street and the Carquinez Strait. It has a bell, cast in New York and carried around Cape Horn by a sailing vessel. Original structure was replaced in 1901 by what is now the County Finance Building.
6 MARTINEZ GAZETTE BUILDING Main and Court Streets	Structure of Historic Significance	Past home of Martinez Gazette, one of California's first newspapers and in continuous publication since 1858.

<u>RESOURCE/LOCATION</u>	<u>EVALUATION CATEGORY</u>	<u>SIGNIFICANCE/IMPORTANCE</u>
7 BERRYESSA ADOBE Escobar and Alhambra Ave.	<u>Site of Historic Event</u>	Circa 1850, Jose del los Santos Berryessa built his adobe at this site. His wife was Francisca Martinez, daughter of Ignacio Martinez, grantee of Rancho El Pinole. Before the courthouse was built the second floor was used for County business. First meeting of Martinez Masonic Lodge was held here in 1854.
8 BUNKER HOME 235 Marina Vista	Structure of Historic Significance	Built in 1877 by the publisher of the Martinez Gazette, R. R. Bunker. The structure is presently being restored.
9 TUCKER HOME Talbart and Escobar Streets	Structure of Historical Significance/ Architectural Specimen	Circa 1880, a sea captain named Tucker built this Victorian home which is now being restored by its owners. This two story structure has a truncated roof, a full basement and an open veranda with decorated pillars. Window detail is segmental with decorated labels.
10 TENNENT HOME Talbart and Escobar Streets	Structure of Historic Significance/ Architectural Specimen	Dr. John Tennent, son of Dr. S. Tennent of Pinole built this Victorian styled structure in 1888. The 2½ story home has a high hip roof and a tower extends first and second story topped by a turret shaped roof. Main floor is elevated over a full basement.
11 STEWARTS GROCERY Castro and Ward Streets	Structure of Historic Significance/ Architectural Specimen	Circa 1879, James Stewart built this general grocery and fruit store and engaged in mercantile pursuits after many years of farming. A western style structure with false front, low gable roof and a stepped parapet for roof trim.
12 WITTENMYER HOME Arreba and Richardson Streets	Structure of Historic Significance	Circa 1890, Lewis Cass Wittenmyer built this home. Wittenmyer was County Clerk in 1876 and instrumental in the incorporation of Martinez as a city in that year.
13 PAUL'S PLACE 1521 Alhambra Avenue	Structure of Historic Significance/ Architectural Specimen	A Victorian home built by Kelly in 1877. The exterior Victorian styling has been maintained although the interior has been altered and used as a restaurant since 1930.

<u>RESOURCE/LOCATION</u>	<u>EVALUATION CATEGORY</u>	<u>SIGNIFICANCE/IMPORTANCE</u>
14 ALHAMBRA HIGH SCHOOL 921 Susana Street	<u>Site of Historic Event/Site</u> Relating to Important Person in History	School classes were held from 1902 to 1921 in the imposing two story wood structure once on this site. John T. Swett was a member of board of trustees. Site is now occupied by offices of Martinez Unified School District.
15 JOHN MUIR HOME 4202 Alhambra Avenue	Structure of Historic Significance/ Architectural Specimen	Dr. John Strentzel, noted horticulturist, built this 17 room Victorian mansion in 1882. In 1890 it became the home of Strentzel's son-in-law, John Muir, noted conservationist and author. John Muir lived here the last 24 years of his life and wrote many books that had profound effect on conservation and the national system of forests and parks. The home, known as the John Muir Home, is now owned by the National Park Service and has been restored to the 1906-1914 era. In recognition of John Muir's contribution to the nature lore of our nation, President Johnson signed a measure in 1964 that established the John Muir National Historic Site on the National Register of Historic Places. Also designated as a California Historical Landmark #312.
16 VINCENTE MARTINEZ ADOBE 4202 Alhambra Avenue	Structure of Historic Significance/ Architectural Specimen	In 1849, Vicente Martinez built this adobe which still stands as a reminder of the County's original 57 historic adobes and one of Contra Costa County's oldest Spanish dwellings. The Adobe is part of the John Muir National Historic Site. Other owners of the property included Edward Franklin (1853) after whom Franklin Canyon was named, then Thomas Redfern and later Dr. John Strentzel (1874) whose daughter would later become Mrs. John Muir. It has been stated that the Martinez adobe with its two story wooden veranda typifies New England influenced California architecture of the 1840's. California Historical Landmark #511.

Source: Preliminary Historic Resources Inventory, Contra Costa County; Contra Costa County Planning Department, 1976.

Map 3 Historic Sites and Structures of the Martinez Area



Source: Preliminary Historic Resources Inventory, Contra Costa County, 1976

Chapter 11

HYDROLOGY

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Planning Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	11-1
WATERSHED CHARACTERISTICS	11-1
CHANNEL CHARACTERISTICS	11-3
HYDRAULICS	11-6
FLOODS OF RECORD	11-6
REGULATIONS	11-7
IMPACTS	11-7
MITIGATION MEASURES	11-13
REFERENCES	11-13

ILLUSTRATIONS AND TABLES

FIGURES

Figure 1: Flood Control Zone 5	11-2
Figure 2: W.U.D. Flood Hazard Area, City of Martinez, 1976	11-4
Figure 3: Existing Site Drainage	11-8
Figure 4: Flood Prone Area; U.S.G.S., 1973	11-9
Figure 5: Runoff Calculations	11-10
Figure 6: Rational Method of Runoff Coefficients	11-11

INTRODUCTION

Understanding and accommodating the characteristics of the watershed in which the Detention Facility project is located is an important facet of the environmental evaluation under the California Environmental Quality Act (CEQA). Peak flows, flood potential, and contribution to runoff are factors to be considered in designing the storm drain facilities accompanying the Detention Facility. This chapter will discuss the above subjects. The reader is encouraged to consult the chapter on water quality for a more in-depth discussion of site-specific contributions to runoff and pollution.

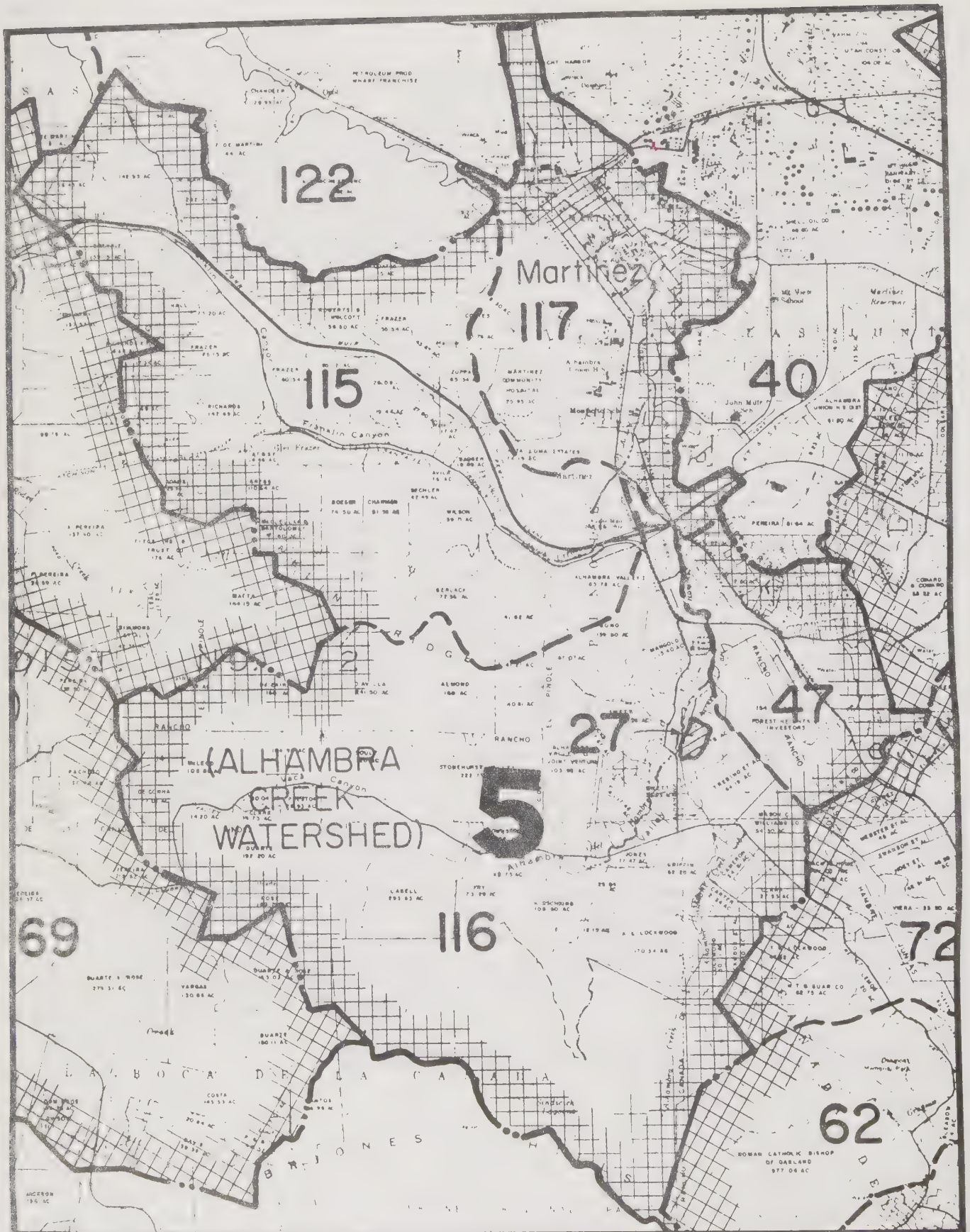
WATERSHED CHARACTERISTICS

The following discussion is based on the 1967 Report by the San Francisco District of the U. S. Army Corps of Engineers (Review Report for Flood Control and Allied Purposes, Alhambra Creek, California, and appendices, June, 1967).

The Detention Facility project is located within the watershed of Alhambra Creek, which drains an area of about 16.5 square miles of the Coast Range foothills (see Figure 1). This watershed is designated as Flood Control Zone 5 by the Contra Costa County Flood Control and Water Conservation District. Drainage improvement plans have been devised for the zone, but few improvements have been constructed. The area lies entirely within Contra Costa County and drains into the Pacific Ocean via Carquinez Strait, San Pablo Bay and the Golden Gate. The basin, which is oriented in a north-south direction, is about five miles long and three and one-half miles wide. The longest watercourse is about eight miles in length. Alhambra Creek and its major tributary, Franklin Creek, flow in an easterly direction before turning north to flow through the City of Martinez into Carquinez Strait. Elevations within the basin range from sea level to 1,500 feet above mean sea level. The basin topography consists of rolling hills and intervening small valleys. Eighty-eight percent of the basin lies at elevations above 200 feet mean sea level but only 18 percent lies at elevations above 800 feet. Hillside slopes range upward to about 40 percent and the overall slope of the longest watercourse is about 170 feet per mile. The northerly slopes and narrow ravines are covered with various species of native oak, buckeye, shrubs and brush. The crests of hills are rounded and covered with annual grasses, alfalfa and burclover and are used for livestock grazing. Some of the more gentle slopes having suitable soil depth are used to raise grain or hay. The wider valleys and terrace benches which are planted primarily in fruit and nut orchards are rapidly becoming urbanized. The basin is traversed by State Highway No. 4 and by the Southern Pacific Company Railroad and the Atchinson, Topeka and Santa Fe Railway. The general features of the basin are shown on Map 1 of this report.

Major sub-areas of the watershed (Zone 5) are tabulated below:

Figure 1
Flood Control Zone 5



Drainage Areas of Major Tributaries and Points Referred to in Text

Description	Drainage Area (sq. mi.)
Alhambra Creek at Southern Pacific Company railroad	16.5
Alhambra Creek below junction with Franklin Creek	14.3
Franklin Creek at mouth	5.16
Alhambra Creek below junction with Pleasant Hill Road tributary (At Atchison, Topeka, and Santa Fe Railway)	8.86
Pleasant Hill Road tributary at mouth	1.06
Pleasant Hill Road tributary at Pleasant Hill Road West	0.89
Arroyo del Hambre at Vaca damsite	2.52
Alhambra Creek at Alhambra damsite	0.87

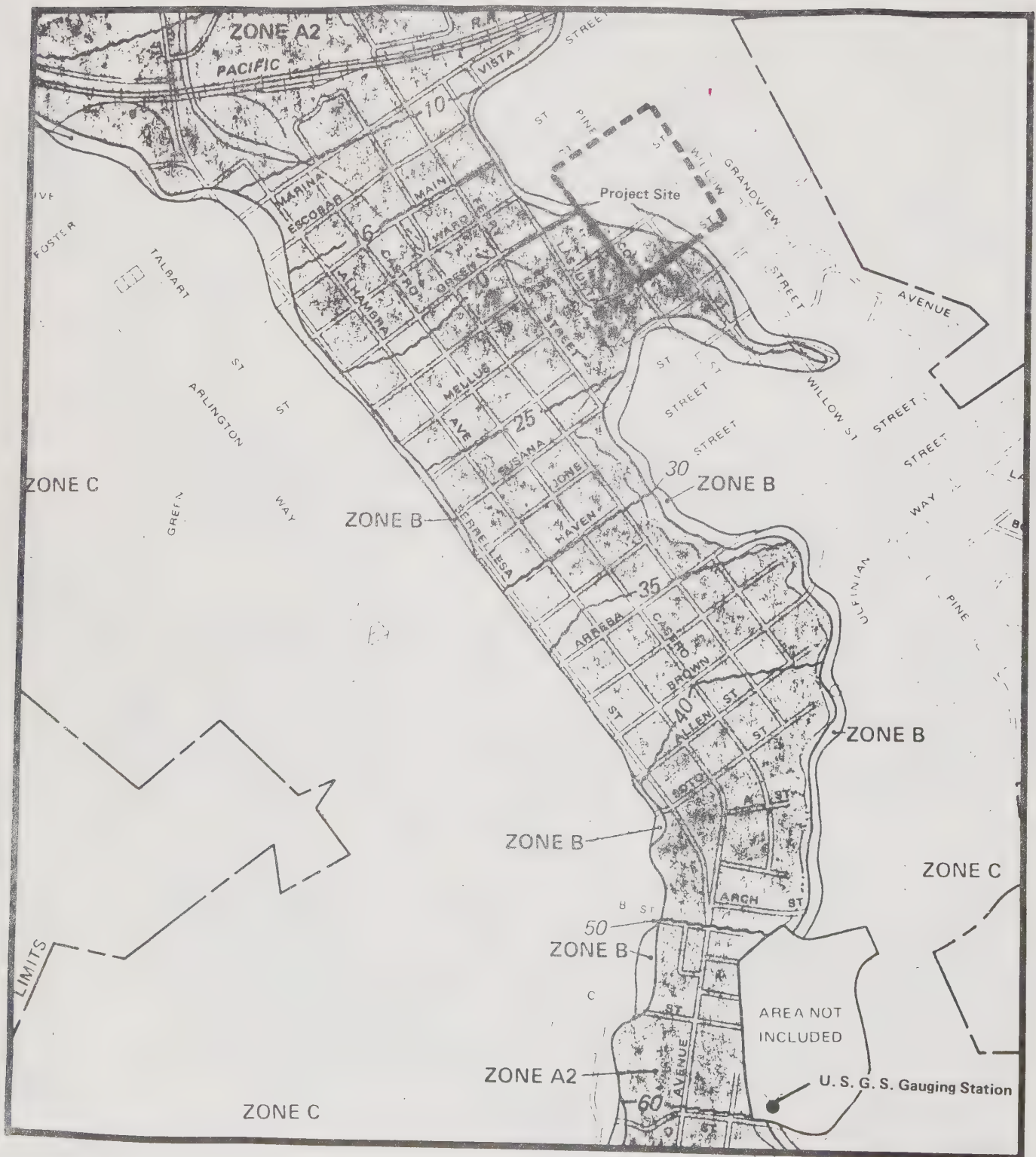
The climate in the watershed area is characterized by warm, dry summers and mild, wet winters. The average annual precipitation is about 20 inches, varying from about 18 inches near Carquinez Strait to 22 inches over higher elevations. Over 90 percent of the seasonal precipitation occurs during the seven-month period, October through April. Snowfall is infrequent and snowmelt is not a contributing factor to flood runoff.

Watershed runoff is measured by a recording stream-gauge on Alhambra Creek at Martinez, which was installed in October 1964 by the U. S. Army Corps of Engineers (See Figure 2). This gauge records runoff from an approximate area of 15 square miles and is maintained by the U. S. Geological Survey. No runoff records are available prior to this date. The East Bay Municipal Utility District has maintained a stream-gauging station since 1938 on Pinole Creek, which drains an adjacent watershed to the west of Alhambra Creek. Records from this station are published in the U. S. Geological Survey Water Supply Papers beginning in 1960.

CHANNEL CHARACTERISTICS

The relatively steep channel slopes, averaging over 100 feet per mile cause rapid rises in floodflows and equally rapid recessions. Flood peaks occur near the mouth of Alhambra Creek about three hours after critical rainfall. Critical storm periods are generally short (from six to twelve hours), and prolonged general storms, such as those which occurred during December 1955 and 1958 and caused record flood peaks on Alhambra Creek, are relatively infrequent. In general, this means that the major water collecting occurs in the hills of the basin and arrives fairly rapidly in the alluvial valleys. These valleys do not have steep slopes nor large defined channels, and consequently water sometimes overtops Alhambra Creek as it approaches the Carquinez Strait.

Figure 2
W.U.D. Flood Hazard Area
City of Martinez, 1976



Summary of Flood Discharges
and 100 Year Flood Discharges at Selected Points
(from U. S. Army Corps Report, 1967)

Design Point	Drainage Area (Square Miles)	Projected 100 Year, Existing Development (cfs)
Arroyo del Hambre at Vaca damsite	2.52	710
Alhambra Creek at Pleasant Hill Road West	7.61	1,700
Alhambra Creek above confluence with Pleasant Hill Road tributary	7.80	1,760
Pleasant Hill Road tributary at Pleasant Hill Road West	0.89	240
Pleasant Hill Road tributary at mouth	1.06	280
Alhambra Creek below junction Pleasant Hill Road tributary	8.86	1,900
Alhambra Creek above junction Franklin Creek	9.10	2,000
Franklin Creek at mouth	5.16	2,000
Alhambra Creek below junction Franklin Creek	14.3	3,200
Alhambra Creek at Southern Pacific Company railroad bridge	16.5	3,500

Procedures used to derive the standard project storm and flood for this basin were approved by the Chief of Engineers, Army Corps, August 30, 1962.

An annual peak discharge-frequency curve for Alhambra Creek at the Southern Pacific Company railroad bridge was estimated by adjustment of the peak discharge-frequency curve for Pinole Creek near Pinole. More extensive data for this watershed are available and a comparison between the Pinole Creek and the Alhambra Creek watersheds is instructive. The Pinole Creek station measures runoff from 10.0 square miles of watershed similar to Alhambra Creek's with a normal annual precipitation of about 23 inches. Adjustment was made by use of a peak discharge correlation curve using estimated flood peaks for Alhambra Creek versus gauged historical and estimated flood peaks for Pinole Creek. The discharge-frequency curve for Pinole Creek is based on the gauged series 1938-62, and derived in accordance with the theory of median plotting position and graphical analysis as presented in "Statistical Methods in Hydrology," January 1962. Discharge at the lower end of the adopted curve was increased arbitrarily to reflect the influence of future urbanization and the diminishing importance of antecedent conditions on frequent storms of low magnitude. Selected values from the adopted curve follow (U. S. Army Corps Report, 1967):

Discharge Frequency
Alhambra Creek at Southern Pacific Company
Railroad Bridge, Martinez, California

Recurrence Interval (years)	Discharge (c.f.s.)
2	730
10	1,920
25	2,550
50	3,000
100	3,500

HYDRAULICS

The lower reaches of Alhambra Creek and its major tributary, Franklin Creek, have limited channel capacities which result in flooding when the discharge exceeds 500 cubic feet per second. Considerable flooding in the City of Martinez and surrounding suburban areas results during higher flows. Extensive flooding occurred during the flood of April 1958 which reached an estimated peak discharge of 2,600 cubic feet per second at the Southern Pacific Company railroad bridge. The limited channel capacity is due to the following:

- a. A tenuous alignment with numerous short radii bends.
- b. Varying cross-sections with many restrictions due to vegetative growth, snags and debris.
- c. Bridges and culverts with inadequate openings that cause overflow and create debris problems.

Most of these limitations were caused by the encroachment of commercial and residential developments.

FLOODS OF RECORD

Flooding along Alhambra Creek in Martinez occurs throughout the reach of the creek from Pleasant Hill Road West to the mouth. The banks of the creek are generally higher than the adjacent lands on the west bank. Consequently, any major overflow from the creek cannot return to the channel and continues flowing along the lands and streets paralleling the creek on the west side. Alhambra Avenue, in particular, acts as a floodway carrying the flow northerly to Buckley Street, where the overflow joins the flood plain of northern Martinez. Overbank flow from Alhambra Creek at Pleasant Hill Road West flows both to the east and west. This overflow returns to the channel near the Atchison, Topeka, and Santa Fe Railroad tracks. Flood flows of Franklin Creek overtop both stream banks and eventually follow Alhambra Avenue in a northward direction.

Floods causing extensive damage have occurred in 1907, 1916, 1922, 1937, 1940, 1942, 1943, 1952, 1955, 1958 and 1962. In addition, in recent years the lower reach of Alhambra Creek has overflowed its banks virtually every year. The area inundated by the 1958 flood, the greatest of record, is estimated at about 420 acres. Based on 1963 price levels and conditions, the estimated amount of flood damage resulting from the 1958 flood was \$450,000. About 50 percent of the damage was to residential development, and the remainder to agricultural development and public facilities. According to the Contra Costa County Flood Control and Water Conservation District, no major floods have occurred since 1962, primarily because of the relatively low rainfall since that time.

Drainage in the Civic Center is poor. There are not enough storm drains and the existing facilities are inadequate to carry local runoff from even a moderate storm. For example, flooding on the corner of Pine and Escobar is a frequent occurrence. There is one 12-inch drain pipe running from Pine Street down Green Street to Alhambra Creek and one 18-inch pipe from Pine Street in Mellus Street which also outfalls in Alhambra Creek (see Figure 3).

REGULATIONS

The project site lies within the 100-year flood plain of Arroyo del Hambre as delineated by Limerinos, et al (1973) (see Figure 4). The southwest corner of the proposed project area lies within the 100 Year Flood Hazard Zone as delineated by the Federal Housing and Urban Development Flood Insurance Act of 1973. As such, structures on the project site should have their ground floor above the flood inundation level of 22 feet.

The alluvial deposits of Arroyo del Hambre constitute a limited groundwater resource in the watershed. Webster (1972) estimates the potential yield of the alluvium to be in the range of 5 to 50 gallons per minute (gpm) while the bedrock yields from 0.5 to 5 gpm. Neither is an important source of fresh water in the area.

The background report chapter on Water Quality (No. 12) discusses the project site runoff and water quality aspects in detail.

IMPACTS

The increased runoff from the proposed Detention Facility will have a minimal impact upon the area's drainage system. The following graph (Fig. 5) depicts the site runoff in cubic feet per second (cfs) on a storm recurrence frequency from 5-100 years.

The runoff coefficients were estimated from the table provided by the Contra Costa County Flood Control and Water Conservation District, Runoff Coefficients for Rational Method, August 1975, drawing no. A-85 (Fig. 6). Tudor Engineering Company, which is designing the drainage facilities for the project, estimates that a coefficient of 0.50 would approximate the existing conditions (e.g., ½ of the rainfall is absorbed). There is a mixture of uses on the project site

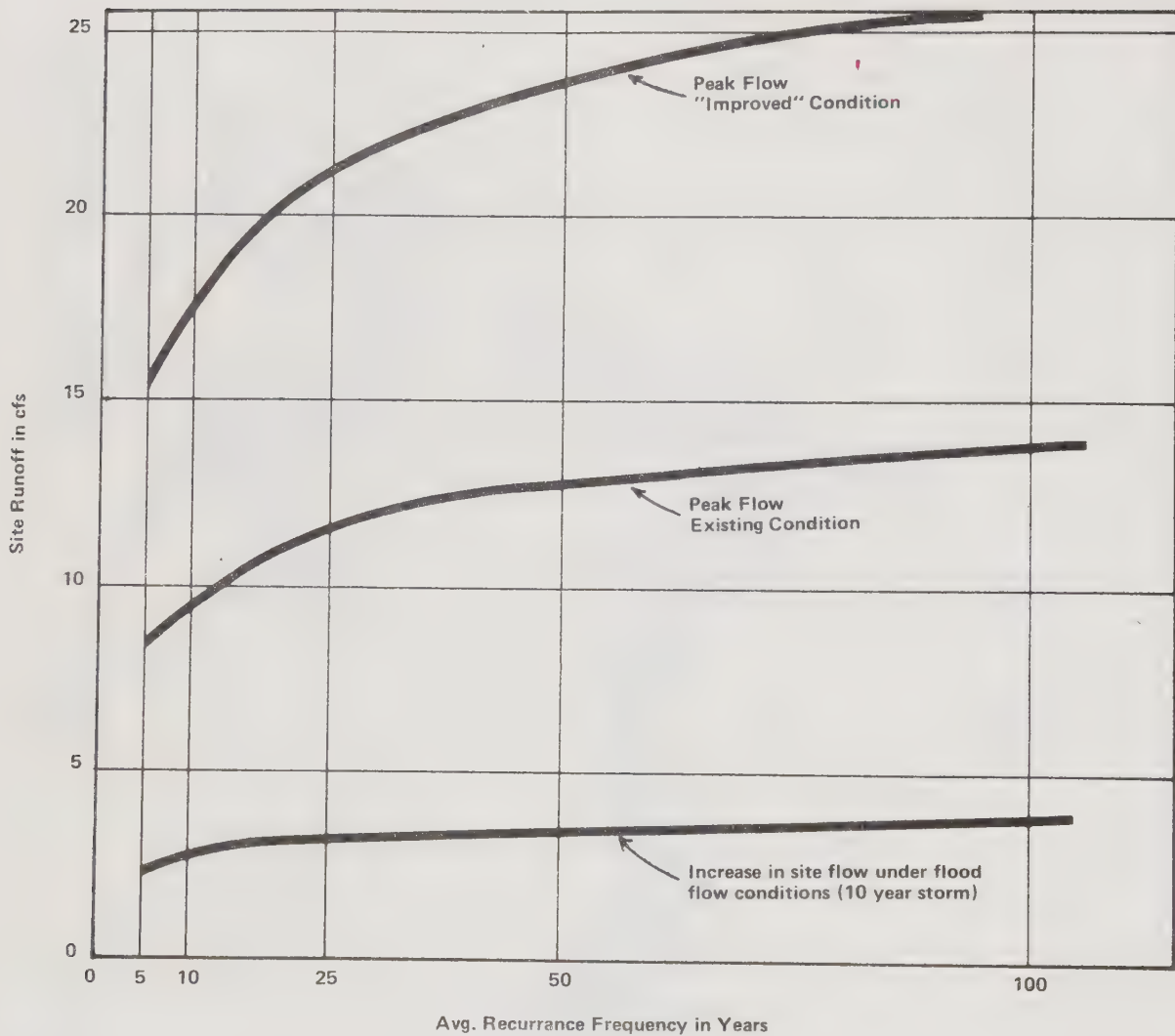
Figure 3
Existing Site Drainage



Figure 4
Flood Prone Area; U.S.G.S., 1973,
Limeriuos et al



Figure 5
Runoff Calculations (Tudor Engineering Co.,
Dec., 1976)



Note: Flows have been computed using the "Rational Formula"
Hydrology Stds. of Contra Costa County, See drawings A-85.
($T_c=10\text{min.}$, (C) existing=.50, (C) improved=.95)

Figure 6

RATIONAL METHOD RUNOFF COEFFICIENTS (C)

The coefficients in the next three tabulations are applicable for storms of 5-year to 10-year frequencies.

AGRICULTURAL LANDS

Description of Area	Runoff Coefficients	Soil Type	Runoff Coefficients		
			Watershed Cover		
Business:			Cultivated	Pasture	Woodlands
Downtown areas	0.70 to 0.95	Above-average infiltration rates; usually sandy or gravelly	0.20	0.15	0.10
Neighborhood areas	0.50 to 0.70				
Residential					
Single-family areas	0.35 to 0.50	Average infiltration rates; no clay pans; loams and similar soils	0.40	0.35	0.30
Multi-units, detached	0.40 to 0.60				
Multi-units, attached	0.60 to 0.75				
Residential (lots 1/2 acre or more)	0.30 to 0.45	Below-average infiltration rates; heavy clay soils or soils with a clay pan near the surface; shallow soils above impervious rock	0.50	0.45	0.40
Apartment dwelling areas	0.50 to 0.70				
Industrial:					
Light areas	0.50 to 0.80				
Heavy areas	0.60 to 0.90				
Parks, cemeteries	0.10 to 0.25	Less frequent higher-intensity storms will require modification of the coefficient because infiltration and other losses have a proportionally smaller effect on runoff. NOTE: $C \times C_f$ obviously must be less than 1.0.			
Playgrounds	0.20 to 0.35				
Railroad yard areas	0.20 to 0.40				
Unimproved areas	0.10 to 0.30				

MODIFICATION FACTORS
FOR RUNOFF COEFFICIENTS

It is often desirable to develop a composite runoff coefficient based on the percentage of different types of surface in the drainage area. This procedure is often applied to typical "sample" blocks as a guide to selection of reasonable values of the coefficient for an entire area.

Character of Surface	Runoff Coefficients
Streets:	
Asphaltic	0.70 to 0.95
Concrete	0.80 to 0.95
Drives and Walks	0.75 to 0.85
Roofs	0.75 to 0.95
Lawns, Sandy Soil:	
Flat, 2%	0.05 to 0.10
Average, 2 to 7%	0.10 to 0.15
Steep, 7%	0.15 to 0.20
Lawns, Heavy Soil:	
Flat, 2%	0.15 to 0.20
Average, 2 to 7%	0.20 to 0.25
Steep, 7%	0.25 to 0.35

Recurrence Interval (years)	C_f
2 to 10	1.0
25	1.1
50	1.2
100	1.25

References:

- Handbook of Applied Hydrology
V. T. Chow, Editor McGraw Hill, N.Y. 1964
- Sewer Design and Construction
ASCE Manual No. 37 ASCE, N.Y. 1960
- Drainage Criteria Manual, Vol. I
Denver Regional Council of Govt.
Denver, Colo. 1969

CONTRA COSTA COUNTY FLOOD CONTROL and WATER CONSERVATION DISTRICT			
Runoff Coefficients for Rational Method			
DESIGNED	CHECKED	SCALE	
DRAWN BB	DATE 8-75	P.L.P. RE	
APPROVED	E.E. No	DWG. NO	A-85

today: parking lots, dirt lots, residences, streets and sidewalks, lawns and several offices. Applying the $C = 0.50$ to the graph reveals that the existing runoff for the 10 year storm is approximately 9 cfs and 13 cfs for the 100 year storm.

The site runoff after the facility is constructed is approximated for a $C = 0.95$ (i.e., downtown areas; 5% of the rainfall is absorbed). Applying this coefficient to the graph shows a site runoff of 17 cfs for the 10 year storm and approximately 25 cfs for the 100 year storm.

If the site is drained to one single facility and is designed for the 100 year storm frequency a pipe of up to 48 inches in diameter will be required to carry runoff. If, however, the site is drained to two areas, one new pipe of 30-36 inches in diameter and the existing 12 and 18 inch pipes would be required; the former northerly in Pine Street and the latter two westerly in Mellus and Green Streets. A 48 inch pipe in Pine Street will be much too large because the site needs only to be drained to the 10 year or at the most 25 year storm. This is because the site is high on the flood plain and is at a 3-6% slope. The 100 year storm would allow water to rise a few inches up the curb and therefore a low risk is involved. Installation of a drainage facility under Pine Street will allow 80% of the site to drain in a northerly direction. This will divert approximately one half of the storm waters which now flow easterly into the facilities in Mellus and Green to the Pine Street facility. This will significantly reduce the potential load on the existing facilities enabling them to carry Civic Center runoff in the future.

For the above reasons a 30 to 36 inch diameter pipe will be more than sufficient to meet the needs of the Detention Facility site, the Civic Center and the hillside to the east.

One of the greatest impacts will be cost. If, for instance, the site is drained in a northerly direction, an underground system must be constructed in Pine Street in front of the County Administration Building to the existing drainage channel immediately to the north of the Southern Pacific railroad tracks. To accomplish this alternative a great deal of grading would be required. The other least costly alternative would be to drain the site in a westerly direction into Alhambra Creek. Since facilities exist in this direction they would only need to be increased in size (larger pipe installed).

The estimated cost of \$50/lineal foot would mean that the total cost of placing a subsurface line of up to 36 inches in diameter will be in excess (with catch basins, etc.) of \$100,000.

The Pine Street alternative will contribute to the capacity of the pipe under the railroad tracks and the open ditch flowing to the bay. The Mellus or Green Street alternatives will contribute to the capacity of Alhambra Creek. It is likely that both systems will be required to adequately drain the site. The Mellus and Green Street facilities exist and the Pine Street facilities will be constructed if the project is approved. It will take approximately 6-8 weeks

to install such facilities. The streets involved will be closed during actual construction activities which will cause inconvenience and traffic congestion. This impact is unavoidable.

MITIGATION MEASURES

The choices are few and they are partially determined by the amount of money the county can spend on off-site drainage improvements for the Detention Facility. Participation in costs by the City of Martinez would ease this restriction.

The preferable alternative from a planning and engineering perspective would be to locate all drainage facilities for the site in Pine Street. However, because of the existing topography it is unlikely that a single drainage facility can adequately serve the proposed Detention Facility.

This alternative could jeopardize the ultimate capacity of the existing drain system north of the Southern Pacific tracks but it has an added advantage to the City of Martinez since it would provide for drainage of portions of the East Hillside area which currently are drained by the street surfaces. Several culverts will require eventual replacement with larger capacity facilities and the drainage channel may need work in the future (under Marina Vista and the railroad tracks). Some of this work could be coordinated with the development of the Waterfront Park.

The most expedient and the least costly alternative is to increase the capacity of the existing facilities beneath Green and Mellus Streets. Very little utility relocation would be required for such an installation. This alternative would require outfall into Alhambra Creek upstream of much of the downtown area. The additional water would increase the flood potential of Alhambra Creek and extensive grading on the project site would be required. Therefore this alternative (all drainage to the creek) is not a good one.

As stated previously, it is likely that both alternatives will be required to accommodate the proposed Detention Facility and probably future Civic Center Development. Traffic congestion, inconvenience, noise, etc., can be reduced by diverting Pine Street to Court Street first (reducing traffic on Pine Street), then phasing drainage facility construction in Pine Street one block at a time (3 blocks: Ward to Main, Main to Escobar, Escobar to Marina Vista).

REFERENCES

U. S. Army Corps of Engineers. Review Report for Flood Control and Allied Purposes, Alhambra Creek, California, and appendices, June, 1967.

City of Martinez, Mr. Al Morris, personal communication.

Contra Costa County Flood Control and Water Conservation District, Runoff Coefficients for Rational Method, August, 1975, drawing no. A-85.

Webster, D. A.; 1972. Map Showing Ranges in Probable Maximum Well Yield from Water-bearing Rocks in the San Francisco Bay Region, Misc. Field Studies, Map MF-431, U. S. Geological Survey, San Francisco, California.

Chapter 12

WATER QUALITY

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Earth Metrics Incorporated
Palo Alto, California
January, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	12-1
EXISTING SETTING	12-1
IMPACTS	12-4
MITIGATING MEASURES	12-5
APPENDIX	12-7
REFERENCES	12-13

ILLUSTRATIONS AND TABLES

FIGURES

Figure 1:	Storm Drainage Flow in the Central Martinez Area	12-2
Figure A-1:	Isoturbidity Contours	12-12

TABLES

Table 1:	Estimated Quantities of Pollutants along Curb Gutters in Project Area	12-3
Table 2:	Estimated Loading Rates for Constituents Due to the Proposed Facility	12-5
Table A-1:	Water Quality Data for Carquinez Straits at Martinez	12-8
Table A-2:	Water Quality Parameters for Two Sites on the Carquinez Straits	12-10
Table A-3:	Total Suspended Solids, March 21, 1974	12-11

INTRODUCTION

The project proposal involves the construction of a new Criminal Justice Detention Facility in the downtown area of Martinez. The proposed facility would be located within a six block area on approximately 7.5 acres.

EXISTING SETTING

Project Area. The proposed Contra Costa County Detention Facility is located within a six block area of the City of Martinez, on approximately 7.5 acres. The project site is characterized by impervious parking lot surfaces which include paved asphalt and asphalt-gravel combinations and residential buildings and landscaping. West of Pine Street, from Ward to Thompson Streets, a hard asphalt surface covers the entire project area except for small landscaped areas around planted trees. East of Pine, between Ward and Thompson Streets, the existing surface is largely made up of older asphalt surfaces with loose gravel covering some portions, and native grasses appearing in cracks or breaks in the surface. A small area of the project site, approximately 930 square meters (10,000 square feet) between Green Street and Thompson, is made up of graded soil. The remainder comprises homes and several offices with their appurtenant driveways and landscaping.

Storm drainage from the project site reaches the Carquinez Straits of the San Francisco Bay via two routes. As shown in Figure 1, north of Green Street, surface drainage runs northwesterly along street gutters towards an outlet culvert underneath the railroad tracks. Two catch basins collect sediments and debris before discharge to the bay.

South of Green Street, a slight slope directs storm flow to the southwest. Catch basins intercept flow and underground mains convey it to the Arroyo del Hambre Creek (Alhambra), which discharges into the Carquinez Straits. The flow from this portion of the project area is part of the larger Arroyo del Hambre drainage basin, which encompasses an area of 16.4 square miles.

Several water quality pollutants are generated within the project area during storm periods. Pollutant loads from non-point runoff occur primarily from November through April and originate from a number of sources. Heavy metals and other toxicants are generated by automobile residues reaching street and parking lot surfaces. Suspended, dissolved and floatable solids occur due to erosion, construction activities, street residue and mineral leaching. Biostimulatory substances, mainly nitrogen and phosphorus, may be contributed to storm-water runoff due to mineral leaching, organic decomposition and fertilizers applied to trees and shrubs. Oxygen consuming materials and organic material that generates a biochemical oxygen demand (BOD) may originate in the project area from leaves, plants or animal wastes. Insect or weed spraying may generate pesticide or herbicide pollutants. It has been estimated (Sartor and Boyd, 1972) that runoff from street surfaces during the first hour of a moderate-to-heavy storm may contribute considerably more pollution to receiving waters than would the sanitary sewage flow during the same period of time. Additionally, the State Water Resources Control Board (1975) has estimated the relative contribution of five day BOD from non-point sources in the San Francisco Bay Basin to be as much as 30 percent of the total load on receiving waters.



Figure 1. Storm Drainage Flow in the Central Martinez Area

The project area, as part of the larger San Francisco Bay drainage basin, can be characterized as a typical urbanized area. Urban stormwater runoffs from such areas contribute substantially to physical and chemical pollutants in the San Francisco Bay receiving waters.

The quality of storm water runoff in the project area can be characterized by estimates (U. S. Environmental Protection Agency, 1972) for several key parameters, as given in Table 1. The values represent the amount of each constituent likely to be found along curb gutters (.59 KM total) within the project area. Storm water runoff washing this total load in to the drainage system would represent a single event flow of pollutants into receiving waters. For the first storm of the year, high biochemical oxygen demand (BOD) and chemical oxygen demand (COD) levels may reduce oxygen levels in bay waters, and other pollutants would add to the cumulative degradation of receiving waters due to urban storm water flow.

Table 1

Estimated Quantities of Pollutants along Curb Street
Gutters in Project Area (grams)

BOD	COD	PO ₄	NO ₃	Pb	Zn	Hg	Total Solids
335	1186	43	22	98	105	11	38,800

Receiving Waters. As discussed previously, runoff from the project area eventually reaches the Carquinez Straits. Archival water quality data from the U. S. Bureau of Reclamation was assembled for the portion of the Carquinez Straits near Martinez, and appears in Appendix A.

Dissolved oxygen levels, at close to 9 mg/l are fairly high in relation to other portions of the bay and meet the Surface Water Quality Objectives (State Water Resources Control Board, 1975) of 7 mg/l for that portion of the Carquinez Straits. Biostimulatory substances, nitrogen and phosphorus, have been a cause of concern for portions of the bay farther upstream from Benicia, and algal growth models are presently being formulated for that area (Bureau of Reclamation, 1976). According to Proctor, (1976) algal blooms do not presently present a problem near Martinez, however.

The circulation of waters in the Carquinez Straits follows typical estuarine patterns with surface water moving out towards the Golden Gate and bottom waters moving inland, or upstream towards the Suisun Bay. As shown in Appendix A, suspended solids and chlorophyll levels may be slightly higher going from Martinez towards San Pablo Bay. The suspended solids and turbidity concentrations reach greater levels downstream toward San Pablo Bay, while turbidity levels are greatest at Martinez during the highest of two daily high tides.

IMPACTS

Construction of the proposed Detention Facility will affect water quality in the receiving body of water, the Carquinez Straits, both during construction and in the subsequent operation and maintenance activities associated with the facility.

Construction Related Impacts. During construction activities, higher than ambient suspended solids loadings can be expected due to grading, excavation and other sediment producing activities if rain washes sediments into receiving waters. Vehicular related heavy metal pollutants, grease and oil will be generated during construction. Pumping of standing water in excavated areas that has accumulated due to precipitation or seepage, will contain quite high levels of suspended solids and would be a source of single event pollution to receiving waters. The problem of suspended solids is tied ultimately to other water quality parameters, since high sediment loads increase the probability of transporting pesticides, nutrients, and various organic pollutants, by acting as a mobile substrate upon which they absorb, or otherwise adhere. (Sartor and Boyd, 1972).

Land Use Related Impacts. The proposal envisions construction of the detention facility on approximately 7.5 acres, some of which is existing parking lot surfaces. As discussed, the existing surfaces are largely asphalt with approximately 10% graded soil. The net hydrological impacts from a land use perspective, will involve the slight modification in the velocity and volume of storm water runoff that accompanies project development.

The amount of rainfall that runs off or drains from a surface varies, depending on the nature of the surface material. A common measure of this variability is the runoff coefficient. Asphalt and concrete street and parking lot surfaces have a runoff coefficient that averages from 0.7 to 0.95 (American Society of Civil Engineers, 1969). Runoff coefficients for lawns and vacant lots average from .18 to .22, while coefficients for building roof surfaces approach a value of 1. This means that the amount of runoff generated from paved, or impervious surfaces will be from 3.5 to 5 times greater than that generated from vacant lots or unpaved surfaces. The proposed facility will affect both the amount of storm water runoff that will eventually reach the receiving water body, the Carquinez Straits and the water quality of the runoff.

The water quality impacts of the facility, from a land use perspective, are related to the loss of existing parking lot surfaces in the project area and the conversion of existing residential uses to streets, parking lots and the facility. In terms of water quality, streets and parking lots generate the greatest amount of heavy metal toxicants, while biochemical oxygen demand (BOD) and total solids loading rates have been found, (Sartor and Boyd, 1976) to be higher in areas associated with residential development. Additionally, possible biostimulatory substances and pesticides would be more common in unpaved lots or landscaped areas, although these impacts are not expected to be significantly adverse.

The loss of parking lot surfaces will result in reduced loadings of grease, oil and trace metals in the immediate area. The number of lost parking places, however, can be assumed to be offset by new parking facilities that will be added in other portions of the civic center and project site (Sanders, 1976). Thus no net or incremental water quality impacts upon receiving waters are expected for these constituents. Landscaping around the proposed facility will add organic material that generates a biochemical oxygen demand to receiving waters, as well as small quantities of nutrients, suspended solids and possible herbicides. The receiving waters, the Carquinez Straits, are most sensitive to nutrients, trace metals, and herbicides or pesticides. Amounts of these constituents will be approximately equal to existing levels (see Table 1) with an expected slight increase in BOD and nutrients due to landscaping around the facility.

Operation and Maintenance Related Impacts. During normal maintenance of facility grounds, landscaped areas may contribute nitrogen and phosphorus biostimulants if they are fertilized. Loading of biochemical oxygen demand (BOD) may occur due to organic material from the same areas. Cleaning operations associated with vehicles or equipment may generate surfactant (detergent) pollutants. The estimated average loading rates for a number of constituents appears in Table 2. These rates would apply to the completed project and are based on estimates (U. S. Environmental Protection Agency, 1972) for similar land uses. While these are considered loading rates, (based on total curb miles), the actual amount of pollutants found along curb gutters would depend on the frequency of street sweeping and cleaning operations with expected average amounts as discussed previously.

Table 2

Estimated Loading Rates for Constituents Due to the
Proposed Facility (grams/day)

Total Solids	Volatile Solids	BOD	COD	Nitrates	Phosphates	Total Heavy Metals
25,200	1961	138	799	7.6	14	47

MITIGATING MEASURES

- Construction operations should be carried out during the dry portion of the year, May through November, for activities that involve potential sediment production.
- Any single activity during construction that would generate high levels of suspended solids, should be carried out in coordination with the optimal tidal stage. As shown in Appendix A, the High Slack Tide would be the most desirable for such single event loads.

- From a water quality standpoint, concrete surfaces should be favored over asphaltic surfaces for streets or parking lots, wherever economically feasible. It has been shown that asphalt surfaces have particulate matter loadings up to 80 percent higher than concrete surfaces (Sartor and Boyd, 1972).
- Construction operations should be coordinated with street sweeping and catch basin cleaning operations downstream of the project area.
- No-parking regulations during certain night hours should be maintained on streets adjacent to the proposed facility to insure optimal effectiveness of street sweeping operations, by maintaining access close to the curb.
- All landscaped areas should be stabilized with native plantings or erosion resistant ornamental plants.
- Flat roofs and automatic or timed release mechanisms should be considered in the facility design, to serve as ponding surfaces that would mitigate the peak storm flow.
- Exposed or bare areas should be minimized during construction, and on-site sediment basins considered to mitigate sediment flows.

APPENDIX A

Data was assembled from the water sampling programs of the U. S. Bureau of Reclamation and the California Department of Water Resources. Sampling was carried out at a depth of three feet. Two sites are relevant to the Martinez area. Site 6 is a point near the Benicia-Martinez Bridge at Bulls Head. Site 42 is located at the confluence of the Carquinez Straits and the San Pablo Bay. Data appears for a recent sampling, August 24, 1976 at Site 6, and for several samples during 1976 for both Site 6 and Site 42.

Table A-1. Water Quality Data for Carquinez Straits at Martinez
(Bureau of Reclamation Site D6)

Parameter	Unit	Mean	Maximum	Minimum	Beginning Date	Ending Date
Temperature	°C	16.1	23	7	1/26/68	6/5/73
Wind	MPH	7.6	23	0	1/26/68	6/5/73
Turbidity	FTU	31.7	132	2.5	1/26/68	6/5/73
Transparency	Inches	18.6	38	6	2/27/68	2/27/68
Conductivity	Micromho	14,164	23,200	310	1/15/73	12/5/73
Dissolved Oxygen	mg/l	8.99	11.7	5.6	1/26/68	6/5/73
BOD ₅	mg/l	1.3	3.2	.2	5/20/68	12/11/74
pH	su	7.75	8.3	6.7	1/26/68	6/5/73
Total Nitrogen	mg/l	.79	3.2	.065	1/26/68	12/11/74
Organic Nitrogen	mg/l	.42	1.7	.01	1/26/68	12/11/74
NH ₃ -N	mg/l	.12	1.7	.005	1/26/68	12/11/74
NO ₃ -N	mg/l	.30	1.3	.05	1/26/68	12/11/74
Total Phosphorus	mg/l	.125	.23	.06	7/23/69	12/11/74
Ortho Phosphate	mg/l	.07	.13	.006	1/26/68	12/11/74
Total CaCO ₃ Hardness	mg/l	1,555	2,967	82	9/27/68	9/9/70
Dissolved Calcium	mg/l	79.2	178	5	9/27/68	9/9/70
Dissolved Magnesium	mg/l	329.8	718	12	9/27/68	9/9/70
Dissolved Sodium	mg/l	1,984	4,000	90	3/27/69	9/9/70
Chloride	mg/l	5,061	9,950	12	5/20/68	12/11/74
Sulfate	mg/l	681	1,080	38	12/18/68	9/9/70
Total Arsenic	μg/l	16.7	30	10	2/15/74	9/11/74
Dissolved Boron	μg/l	1,250	2,600	200	1/26/68	9/9/70

Table A-1. Water Quality Data for Carquinez Straits at Martinez -continued-
(Bureau of Reclamation Site D 6)

Parameter	Unit	Mean	Maximum	Minimum	Beginning Date	Ending Date
Total Cadmium	µg/l	8.9	10	0	5/4/71	9/11/74
Total Chromium	µg/l	15	20	10	5/4/71	9/11/74
Total Copper	µg/l	40	70	10	5/4/71	9/11/74
Total Iron	µg/l	1,044	1,400	580	5/9/73	9/11/74
Total Lead	µg/l	8.9	10	0	5/4/71	9/11/74
Total Zinc	µg/l	26.7	50	10	5/4/71	9/11/74
Mercury	µg/l	.5	1.0	0	2/15/74	5/1/74
Aldrin	µg/l	.003	.003	.003	10/30/68	1/16/74
DDE	µg/l	.003	.003	.003	10/30/68	1/16/74
DDT	µg/l	.012	.085	.01	10/30/68	1/16/74
Dieldrin	µg/l	.003	.003	.003	10/30/68	1/16/74
Toxphene	µg/l	.1	.1	.1	10/30/68	1/16/74
Green Algae	Org/ml	53.9	864	0	11/25/68	12/11/74
Total Algae	Org/ml	703	3,784	0	11/25/68	12/11/74
Total Diatoms	Cells/ml	584	3,718	0	11/25/68	12/11/74

Source: Assembled from Bureau of Reclamation Sampling Data at Bulls Head, near Martinez, August 24, 1976.

TABLE A-2. Water Quality Parameters for Two Sites on the Carquinez Straits.

Date	Suspended Solids (mg/l)		Dissolved Oxygen (mg/l)		Chlorophyll (mg/l)	
	Site 6	Site 42	Site 6	Site 42	Site 6	Site 42
3-26-76	37	40	8.9	9.1	2.63	6.18
4-08-76	15	20	8.9	8.9	3.25	9.27
4-22-76	20	26	9.0	8.8	2.47	7.88
5-11-76	14	18	8.6	8.1	2.94	1.86
5-25-76	14	24	8.2	8.2	3.40	2.94
6-08-76	15	20	7.8	7.8	1.70	1.55
6-24-76	13	8	8.0	7.9	2.17	1.09
7-09-76	11	8	7.2	7.6	2.48	1.24
Average	17.4	20.5	8.3	8.3	2.63	4.0

Source: Assembled from Department of Water Resources Sampling Data, 1976.

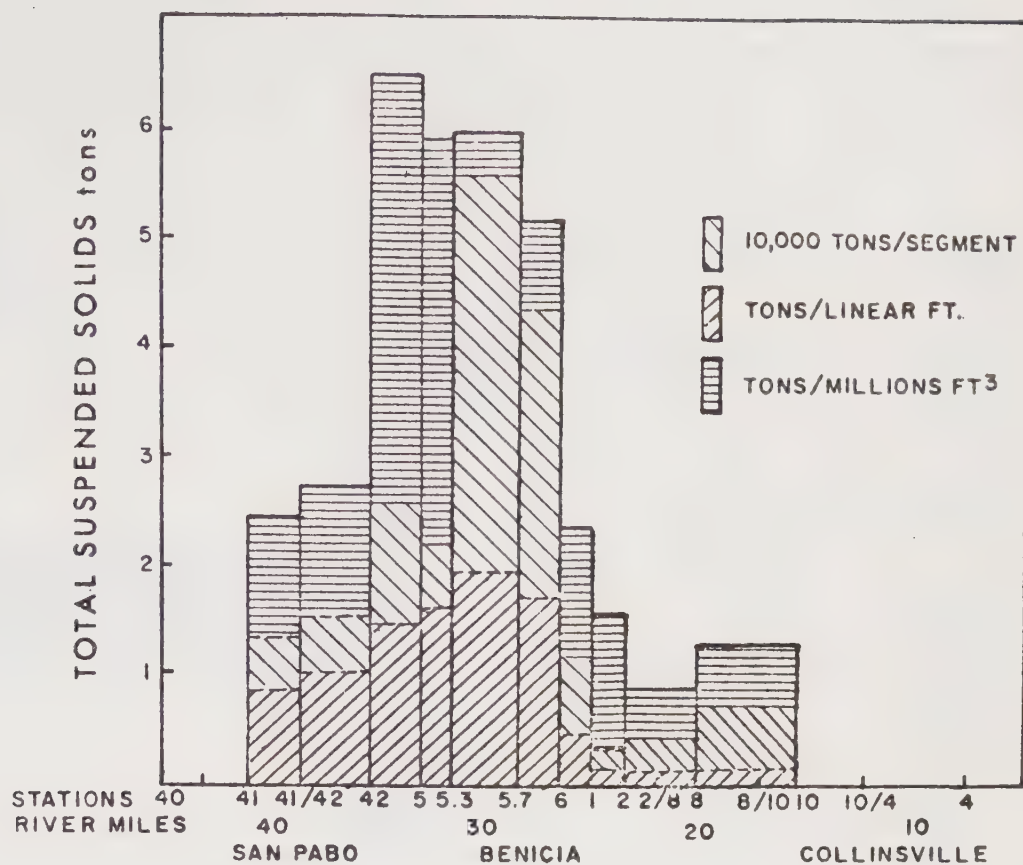


Table A-3. Total suspended solids calculated throughout study area (exclusive of areas shallower than about 5 feet), during high slack tide, on March 21, 1974.

Source: Bureau of Reclamation, 1976.

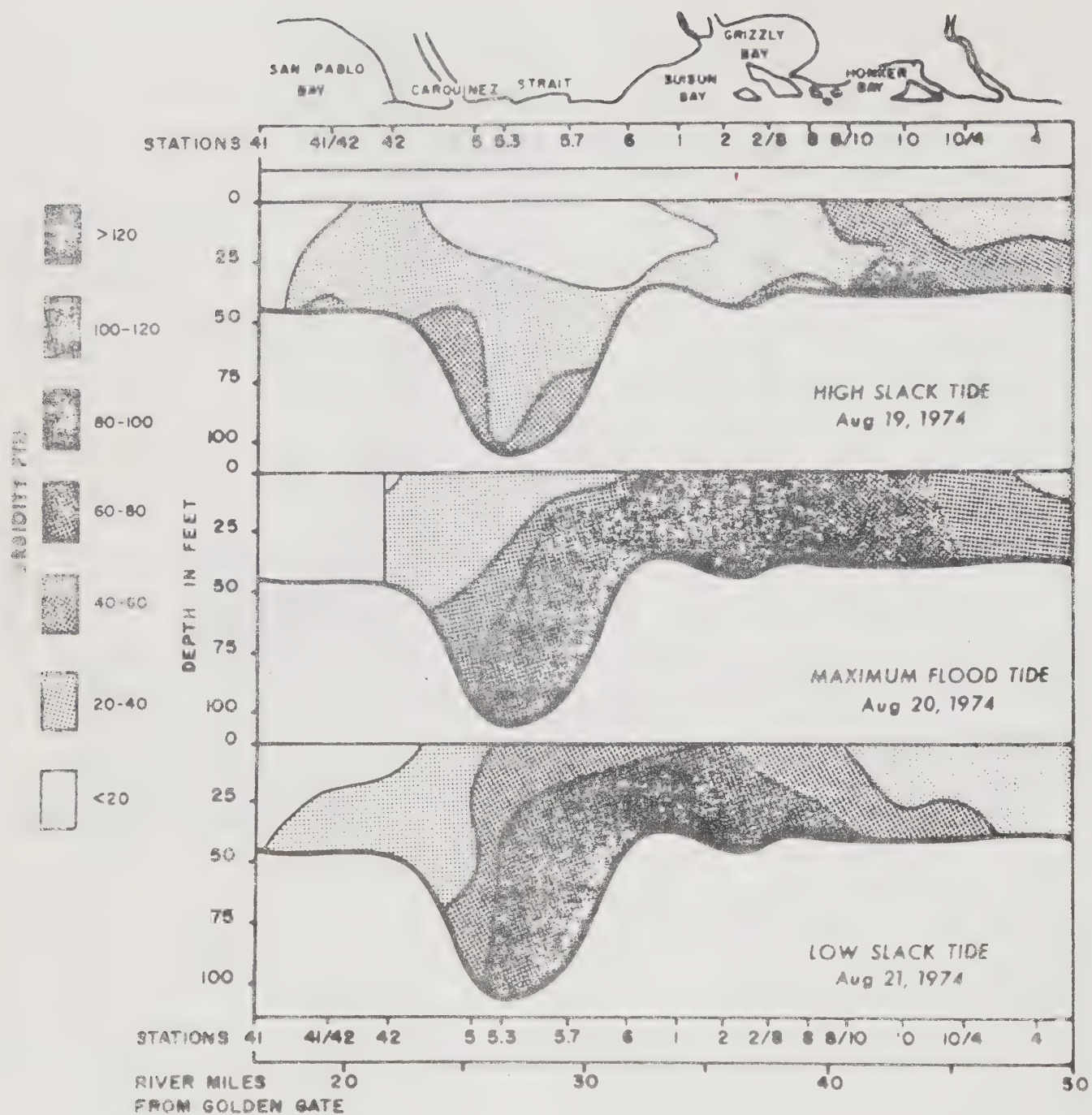


Figure A-1. Isoturbidity contours demonstrating the change in location of the entrapment zone and turbidity concentrations with different tidal phases. Delta outflow index - 11,600 to 12,900 ft^3/s .

Source: Bureau of Reclamation, 1976

REFERENCES

Mr. Proctor, Department of Water Resources, Personal Communication, September, 1976.

Howard Ray, City of Martinez, Department of Public Works, Personal Communication, September, 1976.

Rantz, S. E., Mean Annual Runoff in the San Francisco Bay Region, California, 1931-70. United States Geological Survey, 1974.

Sartar, J. D. and Boyd, G. B., Water Pollution Aspects of Street Surface Contaminants. U.S. Environmental Protection Agency, 1972.

State Water Resources Control Board. Water Quality Control Plan, San Francisco Bay Basin, Abstract. July 1975.

American Society of Civil Engineers. Design and Construction of Sanitary and Storm Sewers: Manuals and Reports No. 37. 1969.

Bureau of Reclamation/California Department of Water Resources Water Quality Sampling Program, Water Quality Data, 1976.

Sanders, Dale. Contra Costa County Planning Department
Personal Communication, 1976.

Chapter 13

AIR QUALITY

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Earth Metrics Incorporated
Palo Alto, California
January, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	13-1
EXISTING SETTING	13-1
FUTURE AIR QUALITY	13-13
MITIGATING MEASURES	13-18
REFERENCES	13-19

ILLUSTRATIONS AND TABLES

FIGURES

Figure 1: The San Francisco Bay Region and Air Quality Monitoring Stations	13-2
Figure 2: Locations of CO Air Bag Sampling	13-6
Figure 3: San Francisco Bay Area Airflow	13-12
Figure 4: 1980 Eight Hour Maximum CO for the No Project Alternative	13-14
Figure 5: 1980 Eight Hour Maximum CO Concentrations for Alternative E	13-15

TABLES

Table 1: Ambient Air Quality Standards	13-3
Table 2: Comparison of CO Experience	13-4
Table 3: Results of Carbon Monoxide Bag Sampling	13-6
Table 4: Comparison of NO ₂ Experience	13-7
Table 5: Total Suspended Particulate Levels	13-9
Table 6: Number of Months Exceeding Ambient Lead Standard	13-10
Table 7: Comparison of Monitoring Stations, Oxidant Violations	13-11
Table 8: Projected Daily Vehicle Emissions	13-16
Table 9: Construction Equipment Emissions	13-17

INTRODUCTION

The project proposal involves the construction of a new Criminal Justice Detention Facility in the downtown area of Martinez. The proposed facility would be located within a six block area on approximately 7.5 acres.

EXISTING SETTING

There are hundreds of substances present in the ambient air which result from natural sources as well as from man's use of his environment. Strictly speaking, these are all air pollutants. This study deals with those pollutants which can be found in significant quantities in the San Francisco Bay Area and which are subject to California or Federal ambient air quality standards.

The major pollutants which are emitted from motor vehicle exhaust (mobile sources) are carbon monoxide (CO), nitrogen oxides (NO_x), hydrocarbons (HC), and particulates including lead (Pb). Particulate, NO_x , HC and sulfur oxides (SO_x) are also emitted in significant quantities by many industrial processes (stationary sources). These contaminants are sometimes referred to as primary pollutants since they are emitted directly from their sources.

The secondary pollutants are those quantities formed by combination of the primary pollutants. The most common are the photochemical oxidants; substances which occur in ambient air through the reaction of NO_x and oxygen in the presence of sunlight and HC. Ozone (O_3) and nitrogen dioxide (NO_2) are oxidants; O_3 is the principal oxidant in California air (as compared to sulfur oxides on the East coast).

The following paragraphs describe the effects and the existing state of each pollutant in the Bay Area Air Basin which is relevant to the proposed project. Because the project site is located between Concord and Vallejo air quality monitoring stations and because the Martinez station measures only SO_2 , data from the Concord and Vallejo stations is used to represent the air quality in Martinez. Figure 1 shows the San Francisco Bay Region and the location of the stations being referenced. Almost all data has been obtained from publications of the Bay Area Air Pollution Control District (BAAPCD). The most recent air quality standards are tabulated in Table 1. Each standard usually specifies levels not to be exceeded more than once per year, or not to be exceeded at all in the case of annual measurements.

The periods to which the standards apply vary with each pollutant, and several pollutants are regulated over more than one time period. In Table 1 the primary standards are those set to protect human health and welfare; the secondary standards protect against damage to vegetation and materials.

Carbon Monoxide. Carbon monoxide is a colorless, odorless, tasteless gas. It is formed as a by product of the incomplete burning of carbon carrying fuels (such as gasoline) and of some industrial processes. High CO levels are generally found near freeways, congested intersections, and urban street canyons. There are two EPA ambient air quality standards for CO; a maximum eight hour average concentration of 10 milligrams per cubic meter (mg/m^3) and a max-

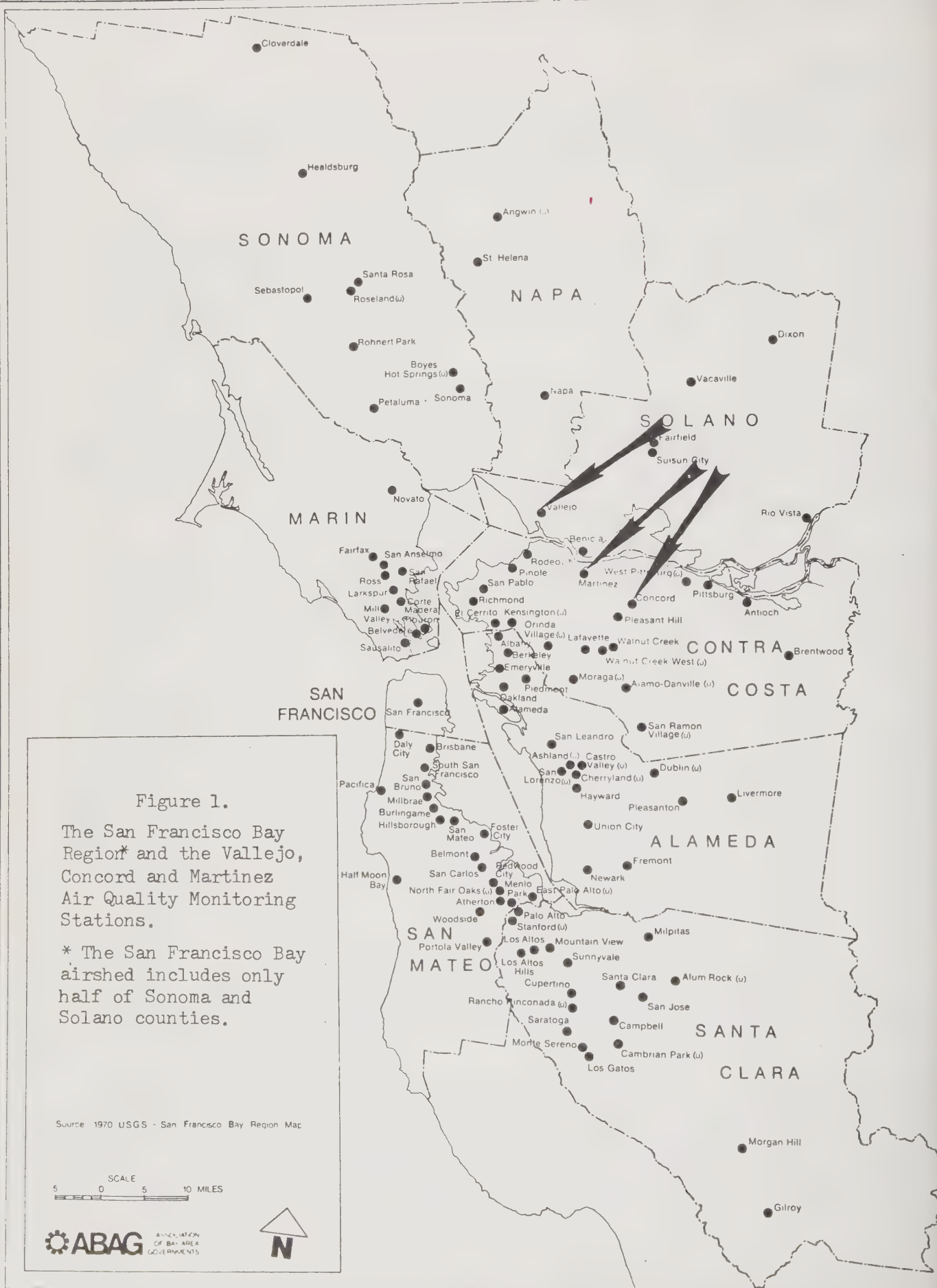


Figure 1.

The San Francisco Bay Region* and the Vallejo, Concord and Martinez Air Quality Monitoring Stations.

* The San Francisco Bay airshed includes only half of Sonoma and Solano counties.

Source: 1970 USGS - San Francisco Bay Region Map

SCALE
5 0 5 10 MILES

ABAG
ASSOCIATION
OF BAY AREA
GOVERNMENTS



AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards		National Standards ¹		
		Concentration ²	Method ³	Primary ^{2, 4}	Secondary ^{2, 5}	Method ⁶
Carbon monoxide	1 hour	0.10 ppm (200 ug/m ³)	Ultraviolet Photometry	160 ug/m ³ (0.08 ppm)	Same as Primary Std.	Chemiluminescent Method
Nitrogen dioxide	12 hour	10 ppm (11 mg/m ³)	Non-Dispersive Infrared Spectroscopy	—	Same as Primary Standards	Non-Dispersive Infrared Spectroscopy
	8 hour	—		10 mg/m ³ (9 ppm)		
	1 hour	40 ppm (46 mg/m ³)		40 mg/m ³ (35 ppm)		
Ozone	Annual Average	—	Saltzman Method	100 ug/m ³ (0.05 ppm)	Same as Primary Standards	Proposed: Modified J-H Saltzman (O ₃ corr.) Chemiluminescent
	1 hour	0.25 ppm (470 ug/m ³)		—		
Particulate matter (TSP)	Annual Average	—	Conductimetric Method	80 ug/m ³ (0.03 ppm)	—	Pararosaniline Method
	24 hour	0.04 ppm (105 ug/m ³)		365 ug/m ³ (0.14 ppm)	—	
	3 hour	—		—	1300 ug/m ³ (0.5 ppm)	
	1 hour	0.5 ppm (1310 ug/m ³)		—	—	
Sulfur dioxide	Annual Geometric Mean	60 ug/m ³	High Volume Sampling	75 ug/m ³	60 ug/m ³	High Volume Sampling
	24 hour	100 ug/m ³		260 ug/m ³	150 ug/m ³	
Lead	30 Day Average	1.5 ug/m ³	High Volume Sampling, Dithizone Method	—	—	—
Mercury	1 hour	0.03 ppm (42 ug/m ³)	Cadmium Hydroxide Stractan Method	—	—	—
Nitrogen oxides (NO _x)	3 hour (6-9 a.m.)	—	—	160 ug/m ³ (0.24 ppm)	Same as Primary Standards	Flame Ionization Detection Using Gas Chromatography
	8 hour	0.1 ppm	—	—	—	—
	1 hour	0.5 ppm	—	—	—	—
Visibility	1 observation	In sufficient amount to (7) reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70%		—	—	—

Standards, other than those based on annual averages or annual means, are not to be exceeded more than once per year.

Units expressed first in units in which it was promulgated. Units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 mm of mercury. Measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 mm of Hg (millibar); ppm in this table refers to ppm by volume, or micrograms of pollutant per mole of gas.

Equivalent procedure which can be shown to the satisfaction of the State Board to give equivalent results at or near the level of the standard may be used.

Primary Standards: The levels of air quality necessary, with an adequate margin of safety, to protect the public health. Each state must adopt primary standards no later than three years after that state's implementation plan is approved by the Environmental Protection Agency (EPA).

5. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant. Each state must attain the secondary standards within a "reasonable time" after implementation plan is approved by the EPA.

6. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.

7. Prevailing visibility is defined as the greatest visibility which is attained or surpassed around at least half of the horizon circle, but not necessarily in continuous sectors.

imum one hour average concentration of 40 mg/m^3 , each to be exceeded no more than once per year.

The standards afford protection against the occurrence of carboxy-hemoglobin (COHb) in the blood of two percent or more. The COHb level in the blood is directly related to the CO concentration in ambient air since CO acts to displace oxygen from hemoglobin to form COHb. This in turn reduces the ability of the blood to distribute oxygen to body tissues. The populations most likely to be affected by ambient CO levels are preschool and school age children, whose high activity level places them in the category most quickly saturated with high COHb levels.

Among adults, the ambient CO levels are often minimal in comparison with CO dosages received by smokers or persons in the near vicinity of smokers. A 1969 community health study estimated that carbon monoxide exposures affect 30 million people per day in the United States. CO levels do not affect vegetation at concentrations presently found in ambient air in California.

Table 2 shows the 1974-75 eight hour maximum CO experience at Vallejo and Concord compared to the highest (San Jose) and lowest (Fremont) CO occurrences at stations in the Bay Area. The Federal one hour standard has not been exceeded in the Bay Area within the last three years. Measurements are given in milligrams per cubic meter (mg/m^3). The fact that Vallejo exhibits high CO levels and Concord low levels tends to illustrate the fact that CO concentrations are local in their buildup, being high near high traffic sources.

Table 2. Comparison of CO Experienced Near Martinez and Comparative Stations

Highest 8 hour CO 1975 (mg/m^3)		Number of days 8 hour standard of 10 mg/m^3 was exceeded	
		1974	1975
Vallejo	12.6	14	12
Concord	8.4	1	0
San Jose	18.1	14	18
Fremont	8.6	0	0

In order to demonstrate the accuracy of the BAAPCD model (BAAPCD, 1975) to be used in estimating the impact of the proposed project on local air quality, five air samples were taken on and near the project site. Each

sample was collected continuously over a fifteen-minute period on Friday, September 10, 1976 between 11:00 a.m. and 2:00 p.m. The samples were collected in aluminized mylar bags with an approximate volume of six liters; the bags were filled using a battery-operated pump, with a constant flow rate so that air intake could be evenly distributed over the 15 minutes. Concurrent meteorological observations and traffic counts were performed with each sample. The samples were subsequently analyzed for carbon monoxide with a CO analyzer, the Ecolyzer 2100. A light, generally northwest, wind (3 mph) was blowing. The sampling sites are shown on the neighborhood map, Figure 2, and the results are shown in Table 3. The sampling results shown in Table 3 can be compared with the concentrations calculated or predicted with the BAAPCD model. The emission factors used for the predictions are those most recently published by the California Air Resources Board (CARB, 1976). As can be seen in Table 3, the BAAPCD method predicts lower concentrations for this area than were actually measured. It appears that the addition of a background factor of approximately 3 mg/m^3 is necessary to account for traffic other than that on Pine Street. Since the measured concentrations occurred during a period of low wind and minimum pollutant dispersal the combination of data from these measurements and the use of the BAAPCD model plus a background figure indicates that the project site is presently well below the one hour CO standard of 340 mg/m^3 . This site is also below the eight hour CO standard of 10 mg/m^3 , according to the calculation based on BAAPCD procedures, since the eight hour maximum is always less than the one hour maximum.

The BAAPCD has estimated that 87 percent of the 3700 tons/day of CO emitted in the Bay Area in 1975 were due to motor vehicles. Traffic within Contra Costa County, in 1975, contributed 318 tons/day of CO, 10 percent of the amount emitted by motor vehicles in the Bay Area. There are several major individual industrial sources of CO in and near Martinez (BAAPCD, 1976).

Nitrogen Oxides. The most important oxides of nitrogen formed during combustion of gasoline are nitric oxide (NO) and nitrogen dioxide (NO₂). Of the two, NO is most abundant in exhaust; NO₂, an oxidation product of NO, is the more harmful to human health and vegetation. NO₂ and other photochemical oxidants are formed by reactions with sunlight and appear as brown haze on days of poor air quality. Since these reactions require time, NO₂ and oxidant usually occur at some distance from the source of the NO_x and are of regional rather than purely local concern. That is, it is not always possible to identify a particular source emission which is the cause of a particular high level of NO₂. As a result there are several technical problems associated with the measurement, analysis, and prediction of NO₂.

Stationary and transportation (automobile and aircraft) fuel combustion processes are both important sources of NO_x. The common stationary sources include both industrial processes and heating of homes and other structures by the combustion of fuels.

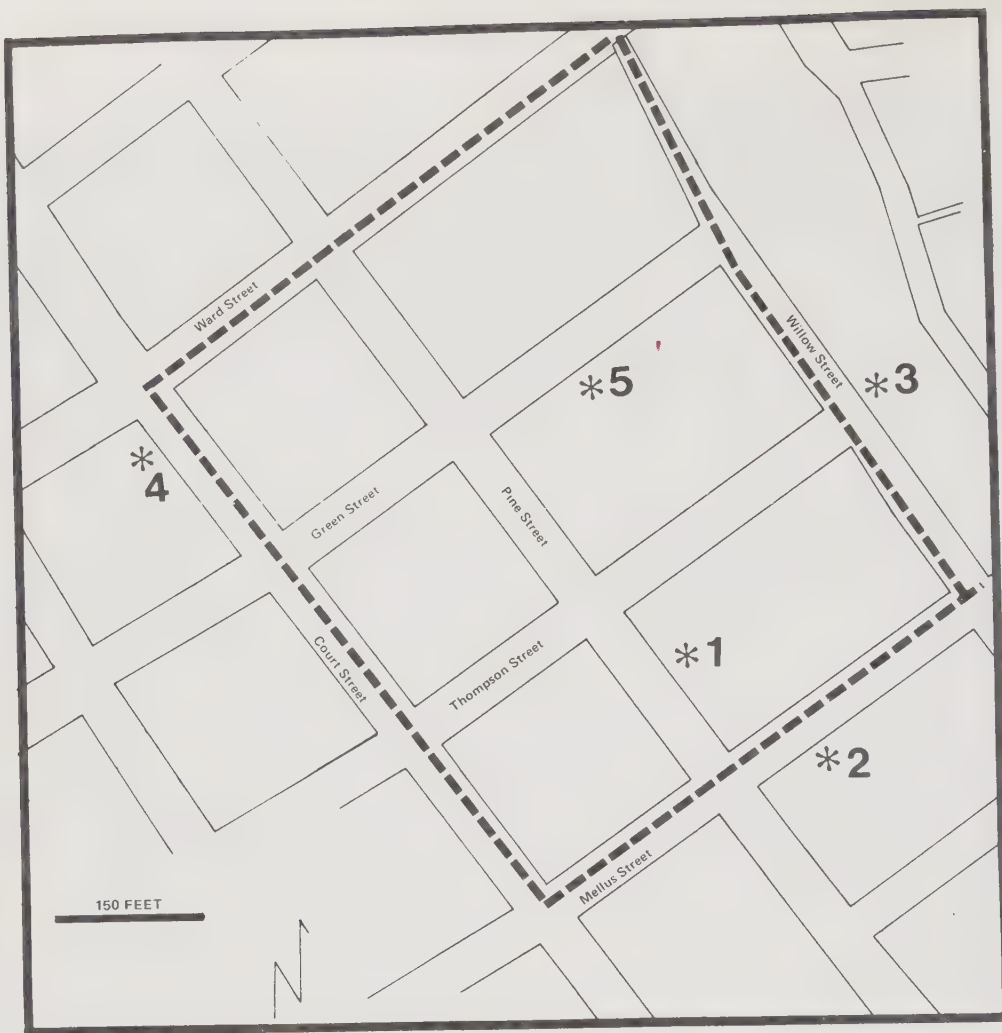


Figure 2. Locations of CO Air Bag Sampling

Table 3. Results of Carbon Monoxide Bag Sampling

Site	Time	Pine Street Traffic	Side Street Traffic	CO Concentration Measured mg/m ³	Calculated Maximum One Hour Concentration Using BAAPCD Methodology
1	1103-1118	202	not counted	5.2	3.9
2	1125-1140	218	7 (Mellus)	4.5	3.0
3	1149-1205	236	7 (Willow)	4.0	2.1
4	1218-1233	not counted	*	6.3	2.7
5	1346-1401	237	9 (Green)	5.7	2.3

*28 vehicles were counted on Court Street; 52 were counted on Ward Street.

The Federal ambient air quality standard restricts the maximum annual arithmetic mean (average) concentration of NO₂ to 100 micrograms per cubic meter (ug/m³). There is an additional California standard of 470 ug/m³ as a one hour average to be exceeded no more than once per year. The standards have been set to protect against two types of effects. In its direct health effects, NO₂ is associated with a variety of respiratory diseases among populations of all ages. It also affects vegetation, causing growth retardation and impairing water intake, especially in fast growing plant types. These symptoms (on both people and plants) occur at concentrations near those measured in ambient air. In addition, NO₂ is an essential component in the natural production of photochemical oxidants (the effects of which are described later in this section).

Table 4 compares NO₂ concentrations measured at Concord, Vallejo, Fremont (the highest in the Bay Area) and Napa (the lowest). The Federal annual average was not exceeded in 1975 in the Bay Area; the State one hour maximum was exceeded once at one station (Fremont).

According to the 1975 BAAPCD source survey, 57 percent of the 660 tons per day of NO_x emitted in the Bay Area were due to motor vehicles. In 1975, traffic within Contra Costa County emitted 38 tons per day, or 10 percent of that in the Bay Area. Stationary (industrial) sources contributed 48 percent of the total NO_x emitted in the Bay Area. Eighty-one percent of the total NO_x emitted in Contra Costa County was due to such industrial uses as petroleum refining and generation of electricity.

The Martinez area does not appear to have a problem with high NO₂ levels, since it is between two stations where this standard is not exceeded. Contributors of NO_x in the area are local industries such as Shell Oil Company and Pacific Gas and Electric Company (BAAPCD, 1975).

Table 4. Comparison of NO₂ Experienced Near
Martinez and Other Stations in the Bay Area

Highest 1 hour NO ₂ 1975 (ug/m ³)	Number of days 1 hour standard of 470 ug/m ³ was exceeded	
	1974	1975
Concord 282	0	0
Vallejo 194	0	0
Fremont 470	0	1
Napa 188	0	0

Hydrocarbons. The term hydrocarbons refers to many different substances which are made up of complex molecules containing carbon, hydrogen and oxygen in varying proportions. Hydrocarbons in the air come mainly from the processing, marketing, combustion and other use of petroleum products. The EPA standard for HC is a maximum three hour average of 160 ug/m^3 which is to be exceeded no more than once a year and applies only to the period of the day between 8:00 a.m. and 9:00 a.m. In addition, it applies only to the reactive hydrocarbons, which excludes the component methane, a simple organic gas present naturally in the atmosphere in concentrations on the order of 1000 ug/m^3 .

The standard has been set solely to limit the amount of reactive HC available to take part in the formation of photochemical oxidant. While the role of HC in this formation is not yet completely defined, the necessity for sunlight and the reaction times needed generally means that the maximum early morning HC concentrations are precursors of the maximum oxidant concentrations at about 12:00 p.m. to 2:00 p.m. on days of poor air quality.

Although hydrocarbons are not measured in Martinez or Concord, measurements in Vallejo are routinely on the order of 10 times the standard, as they are throughout the Bay Area. (In fact, the hydrocarbon standards are routinely exceeded throughout most of California.) The exact magnitude of the excess is not known since the standard applies only to reactive hydrocarbons while the BAAPCD and California Air Resources Board (CARB) measuring techniques measure total hydrocarbons. The high hydrocarbon levels observed imply that there is usually a sufficient quantity of these precursor materials present to form photochemically reactive pollutants whenever the necessary meteorological conditions are present.

The standard is not set to directly protect against health hazards, apparently because of a lack of conclusive experimental data. It is known, however, that biologically active HC carcinogens are present in the atmosphere in far higher concentrations in urban and industrial areas than in rural regions.

Effects on vegetation occur due to at least one hydrocarbon, ethylene, at levels on the order of those now found in urban ambient air. Ethylene is a normal plant hormone; in greater concentrations than are induced by nature, ethylene may produce growth retardation and sickness in all types of vegetation.

HC is produced in approximately equal amounts by transportation and industrial sources in the Bay Area, although in Contra Costa County 72 percent of the HC in 1975 resulted from industrial rather than motor vehicle operations. Since the HC standard has been set in order to reduce violations of the oxidant standard, rather than to mitigate against the health effects of hydrocarbons, this pollutant is generally considered to be of regional, rather than local concern.

Total Suspended Particulate. Particulate matter, either solid or liquid, consists of particles of varying size (2-30 microns) and composition. It may originate in nature or as a result of many human activities; dust, mist, ash, smoke, fumes, and pollen are all particulate matter. There are five

distinct State and Federal standards for total particulate concentrations, a California standard for a single component, lead, and various industrial safety standards for individual elements such as cadmium, beryllium and asbestos.

Only the ambient air quality standards are relevant to this study; these are given in Table 1. The primary standards are designed to protect the public health; the secondary standards protect against effects on soil, water, vegetation, materials, animals, weather, visibility, and personal comfort and well-being. The human health effects of particulate matter consist primarily of direct injury to the lung and introduction of various toxic substances deep into the lung. Plant injury occurs when particulate matter plugs leaf stomata thus reducing the exchange of gases necessary for growth and development. Other effects include the safety hazards inherent in reduced visibility, corrosion of metal and property damage through soiling. The particulate matter generated by tire wear and dust entrainment is often significantly greater than the exhaust particulate although techniques to accurately quantify it are not presently available.

While there are several State and Federal standards for total suspended particulates, the two most often referenced by the BAAPCD are the maximum annual geometric mean of 60 ug/m^3 and the 24 hour maximum average of 100 ug/m^3 , to be exceeded no more than once per year. The history of suspended particulate concentrations in Concord and Vallejo is compared with that of two other stations representing the highest and lowest particulate levels in the Bay Area in Table 5. The Concord BAAPCD station has not exceeded the annual mean standard in the period 1972-1975; Vallejo exceeded it once, in 1974. Both stations exceeded the 24 hour standard occasionally.

Table 5. Total Suspended Particulate Levels

	1973-1975		
	Percent of days over 100 ug/m^3		
	(24 hour average) State standard		
	1973	1974	1975
San Jose	10.6	12.0	13.9
Vallejo	3.4	14.3	5.4
Concord	7.8	5.0	1.7
Redwood City	3.6	5.8	1.8

Only 28 percent of the 180 tons per day of particulate matter estimated by the BAAPCD to be emitted in the Bay Area are motor vehicle emissions; 43 percent is due to miscellaneous industrial and commercial emissions. In 1975, 17 percent of the Bay Area particulate matter was emitted within Contra Costa County; motor vehicles and miscellaneous industrial and commercial sources contributed 3 and 14 percent, respectively to the Bay Area total.

Lead may be the single most harmful component of particulate in the ambient air. California has adopted a standard for this element alone, allowing a maximum 30 day average of 1.5 ug/m^3 . The ARB has chosen to attempt to control atmospheric lead through controls on the gasoline lead content; a proposal to establish a nationwide ambient lead standard was determined to be too difficult to implement.

Lead concentrations have been steadily decreasing for the San Francisco Bay Area Basin, from a district average of 1.3 ug/m^3 in 1970 to a 1974 average of 0.63 ug/m^3 . Recent data for the BAAPCD air quality monitoring station at Vallejo is compared with the San Jose station (which has the highest concentrations in the Bay Area) in Table 6. Lead, like carbon monoxide, is a pollutant which is at its highest concentration near its source. No lead data is available for Martinez.

Table 6. Number of Months Exceeding The Ambient Lead Standard At Selected Stations

	1973	1974
Vallejo	1	2
San Jose	5	2

Photochemical Oxidant. Photochemical oxidants (smog) are produced in the atmosphere when reactive organic substances (chiefly hydrocarbons) and nitrogen oxides are exposed to sunlight. The chief photochemical oxidants in California are ozone (O_3) and NO_2 . There are Federal and California one hour maximum levels set for photochemical oxidants excluding NO_2 ; these are 160 ug/m^3 and 200 ug/m^3 , respectively. The Federal standard excludes SO_2 as well as NO_2 .

The health effects of oxidants are primarily respiratory; irritation of mucous membranes in the respiratory tract and reduced resistance to respiratory infection. Nasal and eye irritation in subjects of all ages have been observed at levels at or near the standards. Oxidants also damage plants, most commonly by growth retardation and leaf injury. Also, many materials deteriorate more rapidly in the presence of ozone than they do in natural circumstances.

Photochemical oxidants are a major air pollution problem in California generally and in the Bay Area in particular. Since this pollutant obeys complex rules of formation involving the presence of sunlight, NO_x , and HC, it is difficult to accurately predict the severity and location of oxidant standard violations. Nevertheless, the climatological patterns of Bay Area topography indicate that the highest oxidant levels will be found in the sheltered inland valleys, generally downwind of highly urbanized areas, during the April to October season.

Table 7 compares the oxidant history of stations near Martinez with that of Livermore and San Francisco at either end of the oxidant spectrum. The comparison is given in terms of number of days in excess of the Federal one hour standard of 160 ug/m^3 , since 1974.

Table 7. Comparison of Monitoring Stations near Martinez, Livermore and San Francisco Oxidant Violations

	1974	1975
Livermore	65	28
Concord	14	5
Vallejo	15	10
San Francisco	1	0

Although oxidants are not measured in Martinez this data agrees with a BAAPCD study which showed that Martinez is northwest of major oxidant problem areas (BAAPCD, 1974). The study indicated that the number of days per year the .10 ppm oxidant standard was exceeded ranges from approximately 20 to 35 in Martinez, while in Livermore, the standard is exceeded 30 to 100 days per year. (These are based on 1969, 1970 and 1972 BAAPCD data).

Thus, while the oxidant standard is not exceeded as often in Martinez as in other parts of the Bay Area, it is nevertheless, exceeded and its importance should not be disregarded. It should also be mentioned that Martinez contributes hydrocarbons and nitrogen oxides to formation of downwind oxidant concentration as discussed in the detailed description of those pollutants. Figure 3 shows the typical airflow types in the San Francisco Bay Area (CARB, 1975). As can be seen in that figure, Martinez most often receives clean marine air, especially in the summer months when oxidant formation is greater. Pollutants from Martinez are, in turn, transported westward possibly at times affecting Livermore oxidant concentrations.

Summary

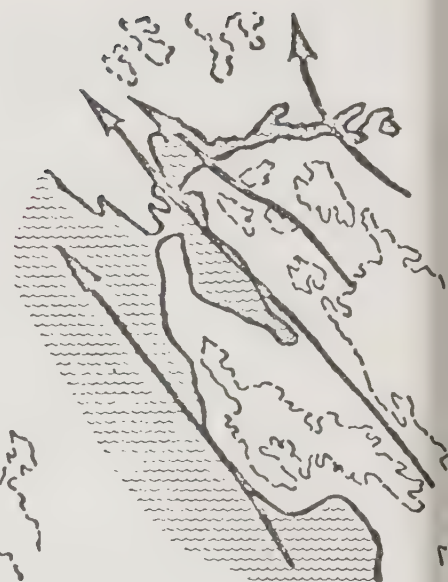
While air quality problems in Martinez are not as severe as in other parts of the Bay Area (partially due to its location near the Carquinez Straits and relatively good ventilation), the oxidant standard is probably exceeded several times each year and the hydrocarbon standard is exceeded often throughout the year. This is true all over the Bay Area.



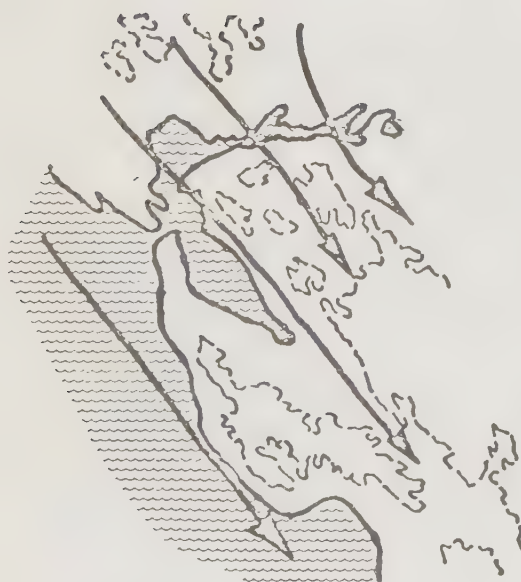
West, Type I
89 percent



South, Type II
2 percent



Southeast, Type III
0 percent



Northwest, Type IV
2 percent



Northeast, Type V
0 percent

Calm, Type VI
2 percent

Miscellaneous, Type VII
5 percent

Figure 3. San Francisco Bay Area Airflow Types and Percent of Occurrence In July - September (CARB, 1975)

FUTURE AIR QUALITY

Future air quality for the project area was examined for the No Project Alternative and Alternatives A through E (see Project Alternatives chapter). For carbon monoxide (CO), maximum eight hour concentration contours were developed based on modelled CO concentrations. (Carbon monoxide was selected since it is a good indicator of local vehicle emissions). Total motor vehicle emissions of hydrocarbons, oxides of nitrogen and particulate were calculated for existing and future conditions in Martinez, the base year for all projections being 1980. Traffic assumptions are based on the traffic analysis for the project by JHK Associates (see Traffic and Parking chapter). The projected motor vehicle emissions and CO concentrations are based on the most recent emissions document published by the California Air Resources Board (1976). Impacts of construction activities are discussed and mitigating measures are presented.

Carbon Monoxide. Due to automotive emission control devices, CO concentrations in the project area will decrease by 1980, despite a projected ten percent increase in traffic volumes. Prediction of the eight hour maximum CO concentration was made, using the BAAPCD model as noted in the previous section. A background of 1.6 mg/m^3 was derived, based on the projected traffic increase and emissions decrease for 1980, and the existing CO background concentration. Contours of the eight hour maximum CO concentrations (including background) are presented for the No Project Alternative and Alternative E (the proposed project) in Figures 4 and 5. For purposes of the carbon monoxide analysis, the No Project Alternative is indistinguishable in impact from Alternatives A and B. Alternative C will produce slightly higher concentrations on Ward Street west of Pine Street because of increased traffic there. Alternatives D and E tend to shift traffic (and carbon monoxide emissions) from Pine Street to Court Street. North of Ward Street for Alternative E (Green Street for Alternative D) most of the northbound and southbound traffic flows on Court Street with Pine Street receiving a smaller portion. All parking lots can be expected to have an additional background of $.3 \text{ mg/m}^3$ (not included in the contours shown in Figures 4 and 5). It is clear from the modelled concentrations, that the Federal and State carbon monoxide standards will not be exceeded in the project area for any of the alternatives.

Other Pollutants

For hydrocarbons, oxides of nitrogens, and total particulate, total vehicle emissions in the downtown area were calculated for existing conditions and for each of the alternatives (see Table 8). Emissions of these pollutants will decrease by 1980 whether or not the project is implemented, although the No Project Alternative will result in slightly lower emissions than any of the "build" alternatives. Although vehicle emissions of hydrocarbons are expected to decrease significantly by 1980, the hydrocarbon standard will probably continue to be exceeded at that time, since it is currently exceeded by such a wide margin throughout the Bay Area; also, as discussed previously, in Contra Costa County only 38 percent of the hydrocarbons were from motor vehicles, the remainder arising from industrial stationary sources. Since the NO₂ standard is probably not exceeded presently in Martinez (see discussion of existing air quality), it is unlikely that it will be exceeded in 1980

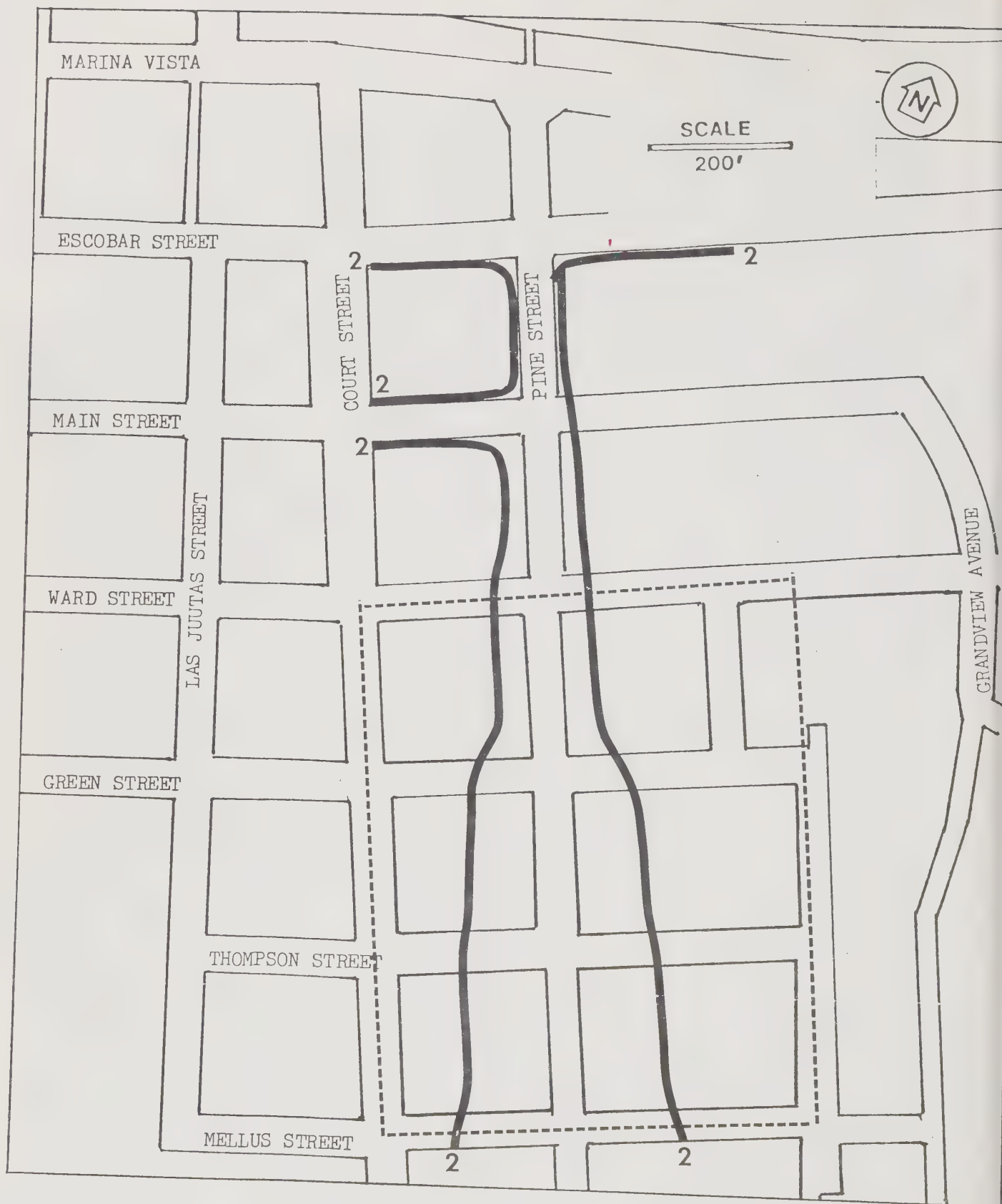


Figure 4. 1980 Eight Hour Maximum CO for the No Project Alternative (mg/m^3)

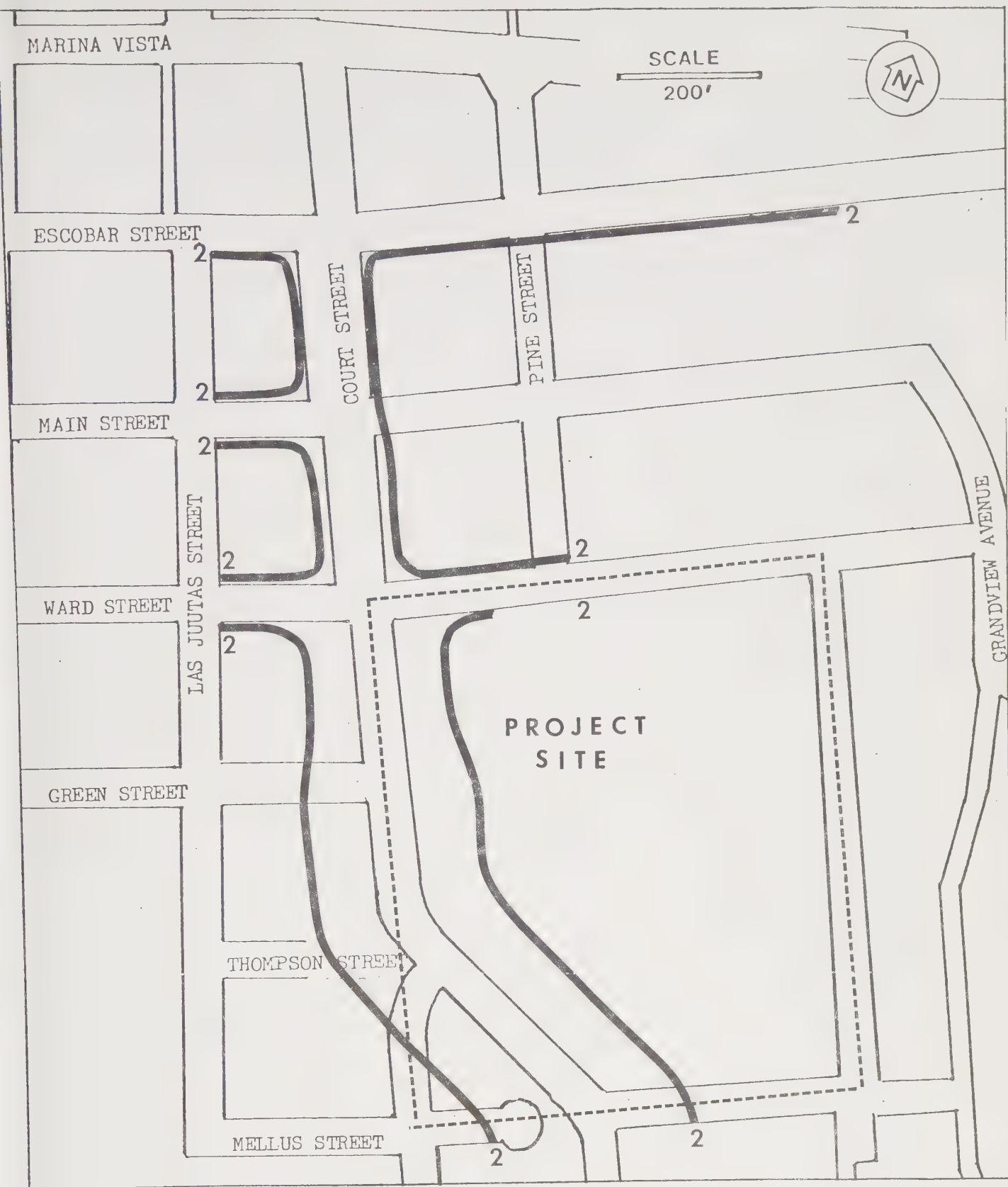


Figure 5. 1980 Eight Hour Maximum CO Concentrations for Alternative E (mg/m^3)

or thereafter based upon the values of traffic volume increase expected. Predictions of oxidant require complex modelling treatment because of the sequence of chemical reactions which form this pollutant. While the trend in the Bay Area is toward fewer exceedences of the oxidant standard, it is unlikely that by 1980, the standard will be met independent of the decision made on this project.

Carbon monoxide, hydrocarbons and particulates emitted from heating and cooling of the facility will be negligible. Oxides of nitrogen emissions, however, may be significant depending upon the temperature of combustion. Since NO_x emissions vary greatly with combustion temperature (increase as temperature increases), it will be important to examine this factor at the time the heating and cooling equipment is chosen. Manufacturers can supply emissions data for their equipment. One criterion in choice of equipment for heating and cooling should be the minimization of NO_x emissions.

Table 8. Projected Daily Vehicle Emissions (Kg) In The Area Enclosed by Court Street on the West, Marina Vista on the North, Willow Street on the East and Mellus Street on the South. Hydrocarbon Values Include Exhaust, Evaporative and Crankcase Emissions.

	Total Hydrocarbons	Oxides of Nitrogen	Particulates
Existing (1976)	23.8	14.0	1.81
No Project (1980)	15.8	11.2	1.48
Alternative A (1980)	16.0	11.3	1.50
Alternative B (1980)	16.1	11.4	1.52
Alternative C (1980)	16.5	11.7	1.55
Alternative D (1980)	16.2	11.4	1.52
Alternative E (1980)	16.6	11.7	1.56
Alternative E-1 (1980)	16.5	11.7	1.55

Construction Impacts

A temporary air quality impact will occur during construction. In addition to emissions from traffic to and from the construction site during the earthmoving operations and paving, two other sources of emissions will be present. First, heavy diesel equipment emit NO_x and CO as well as particulate, HC and SO_2 . Table 9 lists typical construction equipment emission rates, in grams per liter of diesel fuel. A single machine of this type may use from 8 to 19 liters (from 2 to 5 gallons) of fuel per hour. The second, and even more significant air quality impact is the generation of ambient particulate matter in the earthmoving and paving process. While it is not possible to quantify this effect, the ambient air quality standard for particulate will almost certainly be exceeded. For instance, at a BAAPCD station in San Jose which recorded a median average daily particulate concentration of $88 \text{ ug}/\text{m}^3$, this concentration rose to a maximum of $208 \text{ ug}/\text{m}^3$ during a period of nearby construction in 1971; a similar experience was noted in Pittsburgh in 1973.

Table 9. Construction Equipment Emissions

Pollutant	Emissions grams/liter	Emissions, average grams per 10 vehicle/hour
Particulate	3.6	500
SO_2	3.7	500
CO	12.0	1600
HC	4.8	650
NO_x	24.0	3250

MITIGATING MEASURES

The following mitigating measures are suggested to help reduce impacts during operation and construction of the proposed facility:

- Staggered work hours to reduce congestion, thereby reducing CO emissions in and near the parking lots.
- Consider pollutant emissions and combustion temperature in the choice of heating and cooling system equipment.
- Wet down the site regularly during construction.
- Stagger construction tasks which lead to high particulate concentrations such as grading, paving and demolition.
- Exercise care in refueling activities to reduce hydrocarbon emissions during construction.
- Use properly maintained vehicles and equipment for construction.
- Provide proper coverage of materials leaving and coming to the site.

Summary. After the project is implemented and operational, it will have negligible air quality impacts on a local or regional basis. Construction of the detention facility will, however, represent another increment in continued growth in the Bay Area. As such, it will have contribution to pollutants in the airshed however slight.

During construction, there will be temporary impacts locally, notably with respect to particulates. These can be greatly reduced by implementation of the suggested mitigating measures.

REFERENCES

Bay Area Air Pollution Control District (1974, 1975), Contaminant and Weather Summary, monthly reports.

Bay Area Air Pollution Control District, Technical Services Division (1975), Guidelines for Air Quality Impact Analysis of Projects.

Bay Area Air Pollution Control District (1974),
A Study of Oxidant Concentration Trends (1962-1973)

Bay Area Pollution Control District (1975) Base Year 1975 Emissions Inventory Summary Report.

California Air Resources Board (1974, 1975) California Air Quality Data.

California Air Resources Board (1976). Emissions and Air Quality Assessment.

Chapter 14

UTILITIES

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Planning Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	14-1
SANITARY SEWER	14-2
Introduction	14-2
Service Level - Wastewater Management Program	14-2
Project Service	14-4
Impacts	14-6
Mitigation Measures	14-7
WATER	14-8
Introduction	14-8
The Martinez Water System	14-10
System Capacity	14-10
Service Level	14-17
Adequacy of the Water System	14-17
Water Quality - Effects of Drought	14-19
Project Service	14-20
Impacts	14-20
Mitigating Measures	14-23
NATURAL GAS AND ELECTRICITY	14-24
Introduction	14-24
Existing Service	14-24
Project Service	14-24
Estimated Usage	14-25
Design Loads	14-26

Table of Contents - 2

	<u>Page</u>
Other Energy Sources	14-27
Impacts	14-27
Mitigation Measures	14-30
TELEPHONE	14-31
Introduction	14-31
Existing Service	14-31
Project Service	14-31
Impacts	14-32
Mitigation Measures	14-32
TELEVISION AND RADIO	14-32
Introduction	14-32
Description of Service	14-33
Project Service	14-33
Impacts	14-34
Mitigating Measures	14-35
FIRE PROTECTION	14-35
Introduction	14-35
Existing Service	14-35
Project Service	14-36
Impacts	14-36
Mitigation Measures	14-36
SOLID WASTE DISPOSAL	14-36
Introduction	14-36
Project Service	14-39

Table of Contents - 3

	<u>Page</u>
Impacts	14-43
Mitigation Measures	14-43
MISCELLANEOUS	14-44
Medical Services	14-44
Community Facilities	14-44
Impacts and Mitigation Measures	14-44
UTILITY RELOCATIONS/ABANDONMENTS	14-45
Impacts	14-48
Mitigation Measures	14-48
APPENDIX	14-49
Estimated Utility Service Costs	14-49

FIGURES AND TABLES

	<u>Page</u>
 FIGURES	
Figure 1: Martinez Water System: Service Area, Zones Sub-Areas	14-9
Figure 2: Existing Water Works	14-11
Figure 3: Contra Costa Canal Shortcut Pipeline	14-12
Figure 4: Present Solid Waste Service Area Boundary	14-37
Figure 5: Schematic Solid Waste Flow Diagram	14-41
Figure 6: Historical and Projected Populations; Solid Waste Volume Projections	14-42
Figure 7: Existing Underground Utilities	14-46
Figure 8: Proposed Modifications to Underground Utilities	14-47
 TABLES	
Table 1: Existing Wastewater Dischargers Within Central Contra Costa County	14-3
Table 2: Waste Characteristics and Plant Operating Data, 1974	14-5
Table 3: Summary of Water Tests	14-14
Table 4: Domestic Water Analysis	14-15
Table 5: System Storage Facilities	14-16
Table 6: Water Production and Consumption	14-18
Table 7: Health Effects Guideline	14-21
Table 8: Estimated Energy Source Usages	14-28
Table 9: Composition of Contra Costa County Solid Wastes	14-38
Table 10: Summary of Principal Recycling Activities	14-40

INTRODUCTION

The proposed County Detention Facility would require utility services from seven different agencies or companies as listed below. Since each agency provides a separate service to the project, each utility is discussed individually. The utility agencies and the services they provide are:

<u>Agency</u>	<u>Service</u>
Central Contra Costa Sanitary District	Sanitary sewerage
City of Martinez Water System; Contra Costa County Water District	Water
Pacific Gas and Electric Company	Natural gas, electricity
Pacific Telephone Company	Telephone
Televents Incorporated	Cable television and radio
Contra Costa County Consolidated Fire Protection District	Fire protection
Martinez Sanitary Service, ACME Fill	Solid waste disposal

Within each section of this chapter dealing with an individual utility, several topics are discussed. These topics include: a general introduction to the functions of the appropriate agency or company; the level of service throughout the jurisdiction of the agency; a discussion of the work that would be required to provide service to the proposed Detention Facility; the level of service that would be required by the proposed Facility; a listing of known or foreseen impacts the service would have upon the Facility and vice versa; and a listing of measures that could feasibly mitigate these impacts.

An additional section of this chapter discusses "miscellaneous" services. This section briefly discusses medical services available from the County Hospital and various community facilities which would be available to visitors to the proposed Detention Facility.

The final section covers relocations and/or abandonments of existing utilities that would occur should this project be approved and constructed.

An attached appendix lists estimated costs that would be incurred for the various utility services on a monthly and annual basis. It should be emphasized that these costs are estimations; actual service costs may vary depending on the ultimate detailed building design and future changes in basic service charges.

SANITARY SEWER

Introduction

Central Contra Costa Sanitary District (CCCSD) provides sanitary sewer service to most of central Contra Costa County, including Martinez. The District has grown in area from 23,000 acres in 1946, when CCCSD was formed, to its present size of approximately 66,000 acres (103 square miles) (CCCSD Status Report, CCCSD, 1974).

The original District encompasses the communities of Lafayette and Moraga, the City of Walnut Creek, and a corridor to the treatment plant built near the junction of Interstate 680 and State Highway 4 in 1948. The existing District additionally includes most of the San Ramon Valley, Orinda, Pleasant Hill, Martinez, and parts of Concord. Currently, only the City of Concord and Mountain View Sanitary District (near Martinez) maintain separate treatment and collection systems within the central County. The City of Concord is currently constructing a trunk line to transport waste from the parts of the City not already within CCCSD to the CCCSD treatment plant. When this is completed, the Concord treatment facilities near Concord Avenue will be abandoned. However, Concord will continue collection responsibilities. Annexation of Mt. View Sanitary District by CCCSD may occur within the next 10 years (Central Contra Costa Wastewater Management Program (CCWMP) EIR/EIS, CCCSD, 1976).

CCCSD has grown from a service area population of 17,000 and treatment capacity of 4.5 million gallons per day (MGD) in 1948, to a population of approximately 300,000 and treatment capacity of 30 MGD in 1976 (CCWMP EIR/EIS, 1976).

Most of the sewer system in the District is a gravity flow system within the Walnut Creek Watershed. Sewage from areas outside the watershed is pumped into the gravity flow system. Major pumping facilities are located in Orinda, Moraga, Martinez, and the Concord Naval Weapons Station (CCCSD Status Report, 1974).

Wastewater from the CCCSD treatment plant discharges into Suisun Bay via a 4 mile long outfall line. CCCSD is the principal wastewater discharger in the central County. A list of other dischargers in the area is given in Table 1.

Service Level - Wastewater Management Program

CCCSD is currently expanding its treatment facilities to meet the growing demand in central Contra Costa County. If CCCSD's Master Plan is fulfilled, the treatment plant would ultimately expand to a capacity of 120 MGD (CCWMP EIR/EIS, 1976). However, a recent urging by the Federal Environmental Protection Agency (EPA) for a 10 MGD reduction in second-

Table I

EXISTING WASTEWATER DISCHARGERS WITHIN
CENTRAL CONTRA COSTA COUNTY

Discharger	Type of Discharge	Avg. Annual Flow, 1970 (mgd)	Location of Discharge
Municipal Wastewater:			
CCCSD Treatment Plant	Primary Effluent	24.9	Suisun Bay
Mountain View Sanitary District Treatment Plant	Secondary Effluent	1.0	Peyton Slough
City of Concord Treatment Plant	Secondary Effluent	4.6	Walnut Creek
Water Treatment Facilities:			
CCCWD	Filter Backwash	0.05	Walnut Creek
EBMUD	Filter Backwash	0.24	Grayson Creek
Industrial:			
Pacific Gas & Electric Co.	Cooling Water	0.31	Suisun Bay
Avon	Cooling Water	0.31	Suisun Bay
Martinez			
Phillips Petroleum Co.*	Sanitary Sewage, Cooling Water, Petroleum Process Waste	13.1	Suisun Bay
Shell Oil Co.	Sanitary Sewage, Petroleum Process Waste	4.14	Carquinez Strait
Stauffer Chemical Co.	Chemical Process Waste	0.1	Peyton Slough

*Includes Monsanto Company waste

any treatment facilities scheduled for 1978 may curtail future goals of the District to some degree. EPA, as well as State and regional agencies such as the State Water Resources Control Board and the California Regional Water Quality Control Board, San Francisco Bay Region, are considering long-term effects that increased sewage treatment capacity have on population growth and resulting environmental effects such as air and water pollution.

The CCCSD treatment facilities currently perform primary treatment of sewage with a capacity of 30 MGD. The processes involved include pre-chlorination, screening, preaeration with grit removal, and primary sedimentation. Before discharge into Suisun Bay, the effluent is chlorinated and sludge is anaerobically digested and discharged into lagoons and drying beds at the facility (CCWMP EIR/EIS, 1976). Table 2 lists the waste characteristics and operating data of the Treatment Plant in 1974.

Recent expansion of the facilities is scheduled to be completed in 1977. The expansion will increase the primary treatment capacity to 45 MGD and will add secondary and tertiary treatment with a capacity of 30 MGD. This expansion will not be affected by the recent EPA request. The new facilities will include the addition of lime for clarification in the primary sedimentation tanks, biological nitrification and denitrification, dual media filtration, a two-stage sludge conditioning process, and a wet and dry lime process for recalcining (a type of heating) and lime recovery (CCWMP, EIR/EIS, 1976). A second phase of this expansion would increase the advanced treatment capacity to 45 MGD. This phase is scheduled for 1978. EPA officials have agreed orally to give early approval to a construction grant for this expansion if the proposed advanced treatment is reduced to 35 MGD (Horstkotte, CCCSD).

Project Service

The proposed County Detention Facility site is served by a sanitary sewer system that was annexed by Central Contra Costa Sanitary District in 1972. Martinez Sanitary District had previously operated its own collection and treatment system. The integration of the City of Martinez sewage disposal system with that of CCCSD was completed in 1972 at a cost of \$2,300,000. Sewage is now pumped from the old Martinez treatment plant, located near the north end of Berrellesa Street, to the CCCSD treatment plant, a distance of 5½ miles (CCCSD Status Report, 1974). A new trunk line was constructed to integrate the two systems.

The average daily pumping capacity from the Martinez pumping station is 2 million gallons; maximum daily pumping capacity is 4 million gallons (McCoy; CCCSD). The old sewer system in Martinez has some basic problems: high ground water infiltration, inadequate line capacity, poor maintenance access, improper grading (slope), and deterioration due to age. CCCSD currently has no overall program for replacing the old system. Rather, each new development requiring sewer service in Martinez will be evaluated by CCCSD for its effect on the entire system. If improvements are required, the relative effect of the development

Table 2

WASTE CHARACTERISTICS AND PLANT OPERATING DATA, 1974
CENTRAL CONTRA COSTA SANITARY DISTRICT

Month	Flow, mgd		Influent Waste Constituents		Effluent Waste Constituents				NH ₃ -N mg/l
	Avg Daily	Average Daily Peak			BOD		SS		
			BOD, mg/l	SS, mg/l	mg/l	% Removal	mg/l	% Removal	
January	33.9	46.9	122	139	82	33	64	54	19.0
February	28.2	40.8	146	180	101	24	66	63	20.0
March	37.7	51.1	136	142	91	33	73	49	17.7
April	33.3	47.0	148	160	85	43	67	58	20.3
May	28.1	40.8	167	187	94	44	60	68	20.3
June	26.6	38.7	173	192	115	34	66	66	22.5
July	24.8	37.5	208	166	132	37	75	55	28.6
August	23.3	34.6	205	221	127	38	82	63	4.3
September	23.4	35.7	225	218	119	47	64	71	20.4
October	23.2	35.5	179	229	104	42	88	62	24.2
November	23.1	36.8	219	205	125	43	84	59	27.2
December	25.8	39.9	210	188	152	28	84	55	27.3
Annual Avg	27.6	40.4	178	186	111	37	73	60	22.0

Source: Central Contra Costa County Wastework Management Program EIR/EIS,
Central Contra Costa Sanitary District, 1976

on the system determines whether CCCSD, a project developer, or a combination of the two will supply the funds for improvements (McCoy, CCCSD).

The gravity flow system in the vicinity of the proposed Detention Facility directs sewage from the hilly residential area to the east towards Pine Street, and sewage from southern areas northerly on the main Pine Street lines discussed below. Sewage from areas to the west drains westerly and then northerly in other pipelines towards the pumping facility on the waterfront.

The two existing sewer lines, 8" and 10" in diameter, lie beneath Pine Street and bisect the Detention Facility site. A determination has been made by CCCSD that these lines are inadequate to serve the needs of the Detention Facility. High ground water infiltration and improper grade were cited by CCCSD as the reasons for this determination (McCoy, CCCSD). The combination of an improved design and a new 12" sewer line would be necessary for adequate flow. This line would serve adjoining neighborhoods to the east and south as well as the Detention Facility.

Impacts

1. The proposed Detention Facility will generate approximately 60,000 gallons per day (gpd) of wastewater into the public sewer system. This figure is based on an estimated total water consumption of 70,000, where approximately 10,000 gpd would be used for landscape irrigation and would not enter the sewer system (Voelz, Bentley Engineers).
2. The anticipated design flows will require installation of a 10" diameter connection line between the Facility and the new 12" public sewer line to be installed.
3. Monthly sewer service charges from the Detention Facility would be approximately \$3220. This figure is based on the estimated wastewater generation of 60,000 gpd and CCCSD charge of \$1.34/100 cu. ft., or \$1.34/750 gallons generated per month. CCCSD service charges are based on the amount of water consumed (as metered by the Martinez Water System) minus an estimated amount used for landscape irrigation (McCoy, CCCSD).
4. Street closures for the Facility (Green, Thompson, Pine) and the removal of residential buildings remaining on the site will require modification of the local sewer collection system along Willow Street and relocation of the trunk lines beneath Pine Street to Court Street. The Turner Construction Company has estimated that the sewer modifications and relocations will cost \$65,000.
5. All existing sewer lines within the Detention Facility site will be abandoned. These include those lines on Pine Street between Mellus and Ward Streets, and those on Green and Thompson Streets between Willow and Court Streets. Modification of the existing

Willow Street line would direct most sewage flow towards the Mellus Street line which will remain in service. The existing Willow Street line drains into Ward, Green, Thompson and Mellus Streets lines.

Mitigation Measures

1. The County will improve the neighborhood sewer system in the area of the Detention Facility.
 - a. A new 8" diameter trunk line will be installed on Willow Street between Thompson and Mellus Streets. This will provide the neighborhood east of Willow Street with a properly engineered sewer line of adequate capacity (McCoy, CCCSD). Most future flow on Willow Street will be directed southerly towards Mellus Street. A small portion (north of Green) will be directed northerly towards Ward Street.
 - b. A new 12" diameter trunk line will be installed from the intersection of Mellus and Pine Streets, along the proposed Pine Street diversion to the intersection of Court Street and Escobar Street. The new line will provide for better flow from southerly neighborhoods and for increased wastewater generation from the Civic Center area.
2. CCCSD will extend the new 12" Court Street trunk line from Court and Escobar Streets to the corner of Embarcadero and North Court Streets to further improve the system. The timing of this construction is not yet known.
3. Adherence to water conservation measures, as outlined in the mitigation part of the water section of this chapter, would reduce the amount of wastewater generated from the Facility as well as monthly costs for sewer service. These measures include the use of low-flush toilets and low-flow showers and taps.

WATER

Introduction

The City of Martinez Water System, which would supply water to the proposed Detention Facility, is located within Contra Costa County Water District (CCCWD). The City purchases raw water from CCCWD, treats it, and distributes it to consumers within the system's service area. The system is a financially self-supporting utility; that is, administration, operation and maintenance are funded directly by the consumers and no additional taxes are necessary. The system is operated under the direction of the City's Director of Public Works. The water system includes facilities for the storage, transmission, and distribution of water to the City's customers.

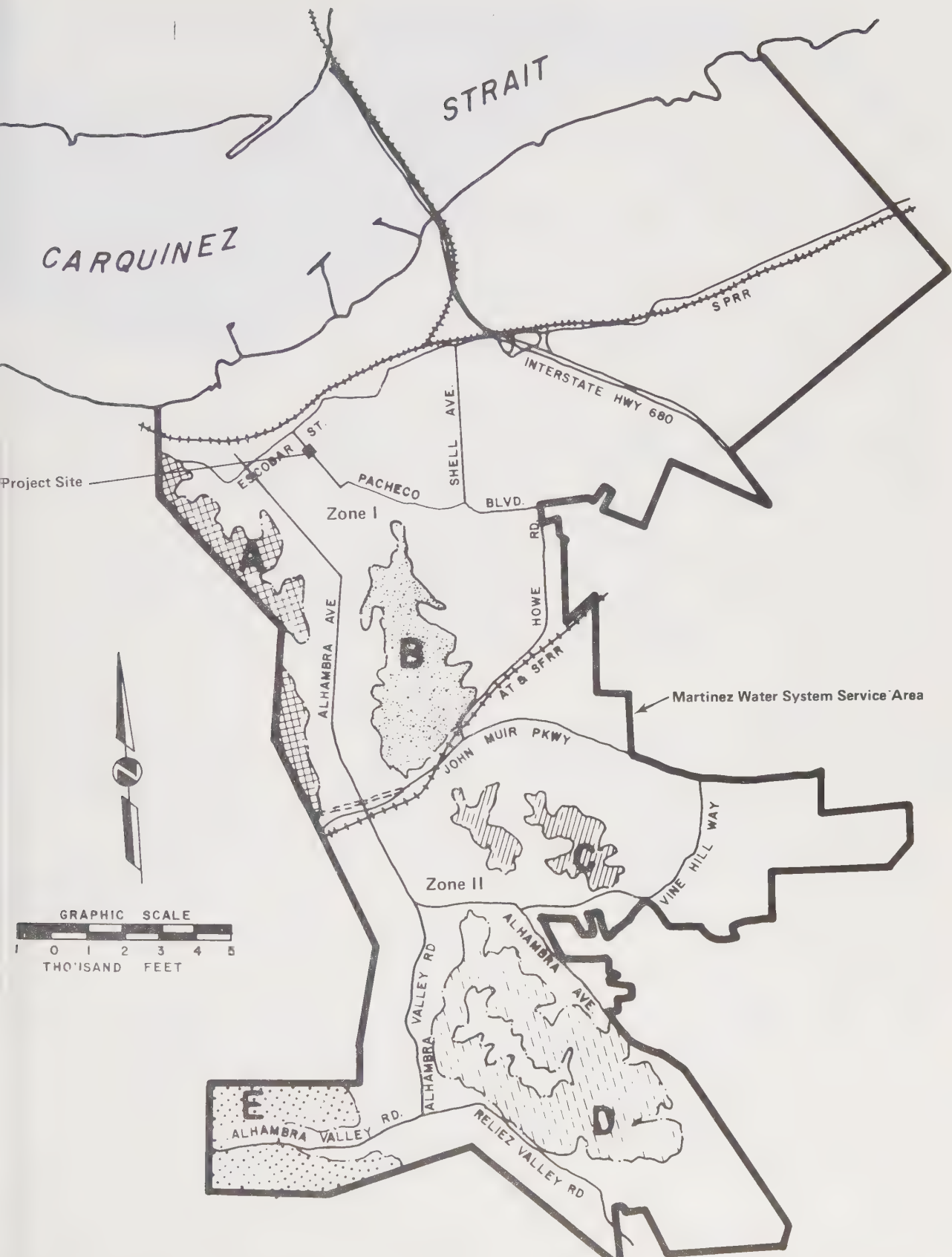
Martinez has been an independent distributor and wholesale purchaser of water since 1918. At that date the City bought the distribution system owned by the Port Costa Water Company and arranged to purchase water from the Company. All water from this system was obtained from seven artesian wells and a pumping station near Concord. This source supplied Concord, Martinez, Port Costa, Crockett, and other small towns in the area. In 1927 the Port Costa Water Company was bought by the California Water Service Company. In 1930 the Service Company built a reservoir and treatment facilities near Concord (Mallard Reservoir). The company supplied Martinez with treated water until the Contra Costa Canal was completed by the Bureau of Reclamation in the 1940's. The Contra Costa County Water District had been formed in 1936 and maintained control of the raw canal water. (Later, in 1961, the District bought out the California Water Service Company and the treatment facilities at Mallard Reservoir.) Martinez built its own treatment facilities in the late 1940's and has purchased untreated water from CCCWD since that time. (Report on Water System Improvements- City of Martinez, Brown and Caldwell Civil and Chemical Engineers, 1957.)

The geographical area served by the City's water system has been determined historically and politically through mutual agreements between the City and Contra Costa County Water District. The present service area is generally that shown on Figure 1. This area includes most of the incorporated City and some bordering unincorporated areas. The western boundary of the service area has not been specifically determined by the City and CCCWD due to the lack of development in that area. As development occurs the appropriate jurisdiction will be mutually determined (Morris, City of Martinez). The LAFCO-determined sphere of influence for urban water service lies on the eastern side of the ridge west of Martinez.

At the same time CCCWD sells raw Contra Costa Canal water to the City, the District operates a system which supplies treated water to the Port Costa area. Some of the pipelines which carry this treated water lie adjacent to the City's pipelines. An example of this situation is on Pine Street at the site of the proposed County Detention Facility (DeVito, CCCWD). A connection, or "interty" between adjacent pipelines belonging to the two systems serves to partially supply Martinez with treated CCCWD water in case of an emergency

Figure 1

Martinez Water System:
Service Area, Zones, Sub-Areas



Source: Waterworks Facilities Report, City of Martinez, California, John Carollo Engineers, 1973

(e.g., temporary loss of power in Martinez' pumping facilities). One of the two interties between the two systems is located at the north end of Berrellessa Street, approximately one-half mile northwest of the proposed Detention Facility. (The other is located more than 3 miles southeast of the project site. Morris, Martinez.)

The Martinez Water System

(See "System Capacity" section for more detail.) The source of water for the Martinez Water System service area is the terminal reservoir, or end point, of the Contra Costa Canal. This reservoir, known as the Martinez Reservoir, is located southeast of the intersection of Howe Road and Pacheco Boulevard in the unincorporated Vine Hill area of Martinez (See Figure 2). Raw water from the reservoir serves two major consumers, the Martinez Water System and the Shell Oil Company. (Waterworks Facilities Report-City of Martinez, John Carollo Engineers, 1973).

The City maintains a pump station which delivers raw water from the reservoir to the Water Treatment Plant located near the northwest corner of Pacheco Boulevard and Howe Road (see Figure 3). Water is tested and treated at the Water Treatment Plant.

The treated water is pumped from the Water Treatment Plant into the actual transmission system. A series of pumps located in strategic spots in the system assure adequate pressure to areas of varying elevations. Six reservoirs in the system augment these pumping facilities and provide reserve capacity for high-demand periods and fire fighting flows (Carollo Engineers, 1973).

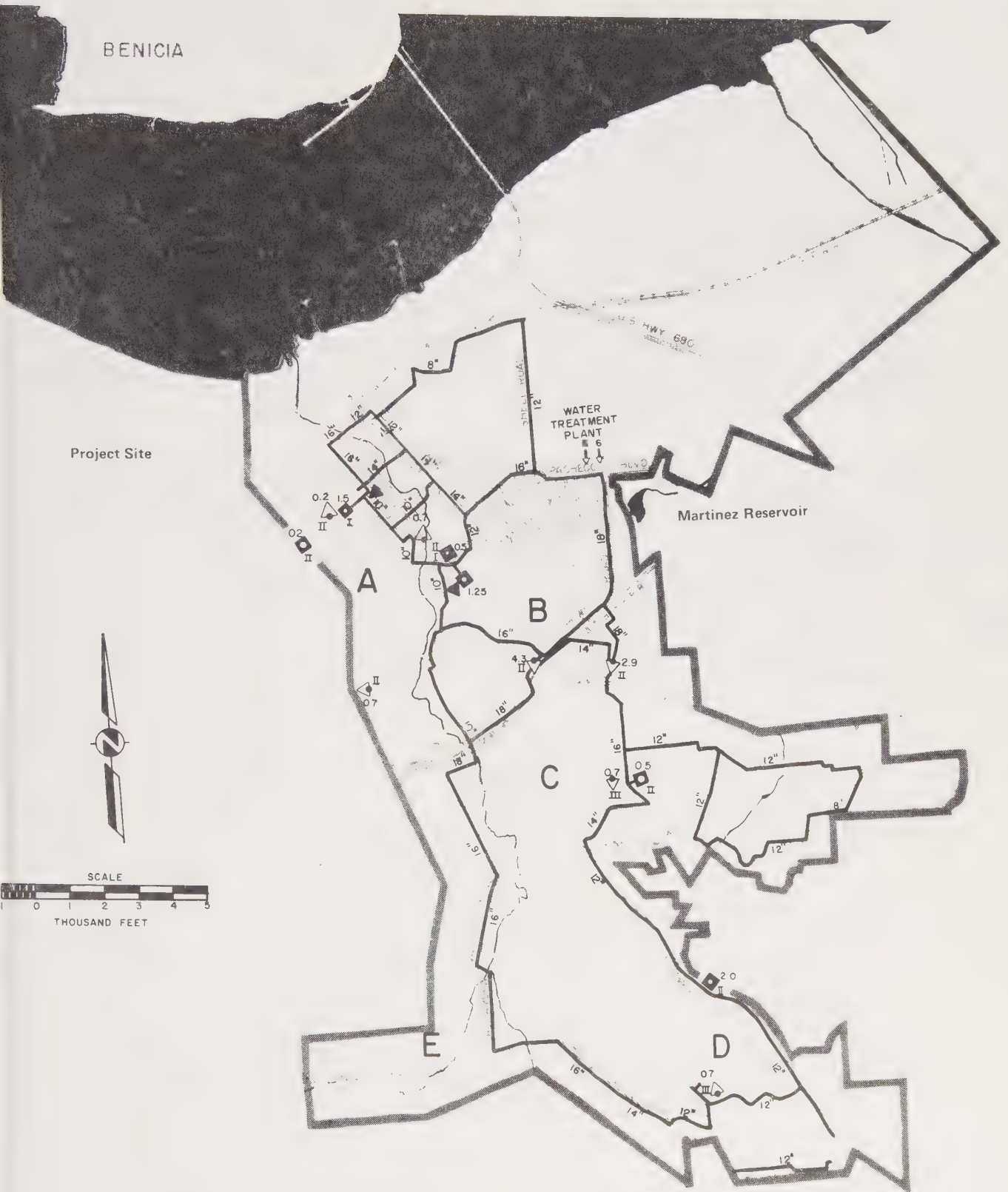
System Capacity

Information for this section is taken largely from Carollo Engineers' "Water Works Facilities Report" for the City of Martinez, 1973. Where other references are used they are identified. The Martinez Reservoir has a maximum volume capacity of 86 million gallons. The Contra Costa Canal supplies water for the reservoir from two sources, the Canal itself and the "Shortcut Pipeline", completed by the Bureau of Reclamation in 1972. This pipeline serves to provide additional flows to the Reservoir; its approximate location is shown on Figure 3.

The Canal has a design capacity at the reservoir of approximately 40 million gallons per day (MGD).

Water quality records from CCWD reflect that the raw canal water has been within the limits of the U.S. Public Health Service Drinking Water Standards at all times (Carollo Engineers, 1973). The current drought may change this record, as it has served to increase salt and mineral concentrations in the raw water. Chloride is the substance that is monitored to determine the amount of salt in water. The U.S. Public Health Service (USPHS) minimum standard for chloride is 250 mg/l, or 250 ppm (USPHS Drinking Water Standards, 1969). Recently, the chloride concentration in Canal water at the CCCWD treatment

Figure 2
Existing Water Works



Source: Waterworks Facilities Report; City of Martinez, California, John Carollo Engineers 1973

Figure 3
Contra Costa Canal Shortcut Pipeline



Source. Waterworks Facilities Report; City of Martinez, California, John Carollo Engineers, 1973

plant has reached a peak day level of 248 mg/l (one day) and a peak hour level of 260 mg/l (DeVito, CCCWD). (Refer to the "Water Quality" section of this report for additional information and analysis.)

Raw water from the Martinez Reservoir flows through a 30" diameter outlet pipe to a vault where the flow is metered, and then through a 30" pipe to the Raw Water Pump Station. The Pump Station consists of two 6-MGD and two 4-MGD pump units (total capacity, 20 MGD) which deliver raw water to the Water Treatment Plant. The Water Treatment Plant is actually two plants, one, the original facility and the other, a 1967 addition. The latter plant handles most flows for the City and is capable of producing a maximum of 10 MGD of purified water. The former plant may produce approximately 6 MGD if necessary.

Water quality at the Water Treatment Plant is subject to several tests and treatment processes. Table 3 summarizes the tests performed. Table 4 is an example of finished water quality in 1973. Treatment processes include aeration, flocculation (mixing with chemicals), sedimentation, and filtration.

The treated water is pumped from the Water Treatment Plant into the transmission system by means of six pumps located at the plant. The water is normally discharged at a pressure between 100 and 105 psi. The Carollo report divided the service area of the Martinez Water System into two major pressure zones and five additional subareas, as shown on Figure A. The area north of the John Muir Parkway (Highway 4) is referred to as Zone I and is generally under 150 feet in elevation. The proposed Detention Facility is in this zone. With the exception of subareas A and B, the water pressure from the Water Treatment Plant is sufficient to supply Zone I. Adequate pressure in subareas A and B is supplied by the Hillside Drive, St. Mary's, and Mountain View pump stations, as shown on Figure 2.

The area south of John Muir Parkway is referred to as Zone II, and is generally over 150 feet in elevation. Water is transferred to this area by the Howe Road and Muir Oaks pump stations. These provide sufficient pressure for the area except for the upper pressure subareas C, D and E. Subareas C and D are supplied by the Muir Oaks (secondary) and Webster Drive pump stations, subarea E has no pumping facilities, with resultant low pressures.

There are four existing reservoirs in the Zone I area and two in the Zone II area which augment the pumping facilities and provide reserve capacity for high demand periods. These are listed in Table 5 and are depicted on Figure 2.

Transmission mains are generally considered to be lines 10 inches in diameter and larger. The transmission main system is shown on Figure 2. Water lines extending from the transmission lines are considered distribution lines. The distribution line system in the vicinity of the Detention Facility site is composed of lines which range in size from 2" (Willow) to 12" (Pine) in diameter.

Table 3

SUMMARY OF WATER TESTS

<u>Location</u> <u>(1)</u>	<u>Frequency</u> <u>(2)</u>	<u>To</u> <u>Determine</u> <u>(3)</u>	<u>Equip-</u> <u>ment</u> <u>(4)</u>	<u>Remarks</u> <u>(5)</u>
Intake	Daily	pH	1	To determine require- ments for caustic soda
		Hardness	1	
		Alkalinity	1	
		Chlorides	1	
		Turbidity	2	To determine alum requirements
	As required	Turbidity	3	To determine alum requirements
		Copper	1	
Flocculators, filters, and system pumps	2 Hours	Chlorine residual	4	
Filter effluent	Continuous	Turbidity	5	
System pumps	Daily	Fluoride residual	1	
	Daily	Bacteria count		No positive record
Distribution piping random points	20 times monthly	Bacteria count		No positive record

Col. 4: 1, Reagent and color comparator
2, Turbidimeter
3, Jar test
4, Color comparator
5, Hach turbidimeter

Table 4

DOMESTIC WATER ANALYSISCOMPOSITE SAMPLE JULY 1973

<u>Constituents</u>	<u>Parts Per Million</u>	<u>Desirable Limitations</u>
Calcium (Ca)	24	33 Med. Hard 75 Permissible
Magnesium (Mg)	20	125
Sodium (Na)	91	350
Potassium (K)	7	-
Ammonium (NH ₄)	< 0.025	0.043
Iron (Fe)	< 0.05	0.3
Manganese (Mn)	< 0.01	0.05
Fluorides (F)	0.7	1.0
Carbonates (CO ₃)	0	25.
Bicarbonates (HCO ₃)	87	250.
Chlorides (Cl)	134	250.
Sulfates (SO ₄)	75	250.
Sulfides (S)	< 0.01	-
Nitrates (NO ₂)	< 0.001	-
Nitrates (NO ₃)	< 0.5	45.0
Arsenic (As)	< 0.01	< 0.1
pH	8.0	
Hardness as CaCO ₃	143.0 8.33gr/gal	{ 220 ppm [medium hard] 50-100 ppm [very soft] 500-1000 ppm
Total Solids @ 105°C	405	
Electrical Conductivity	70	
Mhos/cm x 10 ⁵ @ 25°C		
Color	0 Color units	
Odor	None	
Turbidity	0.07 Jackson units	

Table 5

SYSTEM STORAGE FACILITIES

Name	Service Area	Capacity (mg)	Elevation	
			Bottom (feet)	Overflow (feet)
Thomas Hill	Zone I	1.5	242	253
Mountain View	I	0.5	234	251
Harbor View	I	1.25	250	280
Hillside	A II	0.023	463	477
Muir Oaks	II	0.5	380	410
Alhambra Avenue	II	2.0	380	410

Source. Waterworks Facilities Report; City of Martinez, California, John Carollo Engineers, 1973

Service Level

The City of Martinez Water System now serves 7,309 customers, all of which are metered. Since 1965, when there were 4,863 customers served, the number of new connections per year has averaged 222. Table 6 was taken from the City of Martinez "Official Statement", 1976, summarizes recent water production (treatment) and consumption information.

There is currently no data which group water consumption by consumer category such as industrial, commercial, institutional, and residential (Morris, City of Martinez). However, the Carollo Engineers report, 1973, indicated that in 1972 the County Administration buildings consumed approximately 5 million gallons, or less than 1% of the total amount consumed that year in the City service area. More recent data are not available for County water consumption.

Adequacy of the Water System

The Carollo Engineers report analyzed the existing waterworks system, estimated future needs, and suggested necessary improvements. The report generally concluded the following: 1) Water from the Contra Costa Canal that is supplied to the Martinez Reservoir is of sufficient capacity to provide the needs of the Water System beyond the year 2000. 2) Sufficient capacity is available at the Water Treatment Plant to serve the area through at least 1995, provided that no new "high rate" (e.g., industrial) consumers move into the area. 3) No new storage facilities are required until beyond 1995. 4) Several additional transmission mains will be required to complete the system and provide sufficient pressures to existing and projected consumers. 5) Pumping facilities improvements will be necessary to increase pumping capacity, satisfy future "peak hour" demand, and augment future fire fighting capability. 6) A specific construction plan through 1980 for the suggested improvements may be funded by the City from remaining water bond authority or from operating revenues.

The City of Martinez is currently on schedule with the suggested improvements and foresees completion of the improvements to assure adequate water supply for approximately the next thirty years (Morris, City of Martinez).

Population projections within the Martinez Water System Service area compiled by the County Planning Department (1976) differ from those compiled by Carollo Engineers as listed below:

TABLE 6

WATER PRODUCTION AND CONSUMPTION
MARTINEZ WATER SYSTEM

	1971/72	1972/73	1973/74	1974/75	1975/76
Water Production (treated) (million gal.)	1,553,420	1,477,524	1,388,925	1,384,039	1,494,726
Water Consumption (million gal.)	1,489,250	1,460,586	1,329,641	1,383,061	1,475,525
Average number of service connections	6,863	7,038	7,153	7,300	7,309
Consumption per average connection (thousand gal.)	217.0	207.5	185.9	189.5	201.8

Source: Official Statement for the City of Martinez, November, 1976.

Current and Projected Population Within the Martinez Water System Service Area

County Planning
Department (1976)

Carollo
Engineers (1973)

1970	22,508 ¹	19,600 ²
1975	26,230 ¹	22,100
1980	29,500	25,700
1985	32,200	28,300
1990	33,000	29,300

¹ 1970 Census and 1975 Special Census Data.

² This figure was based on an estimated population of 3.0 people per water connection rather than 1970 Census data (Carollo Engineers, 1973).

Although the population figures differ by as much as 16% (1975), the adequacy of the water system should not be affected for two major reasons. 1) The Carollo report based the suggested improvements on projected maximum or peak hour and peak day consumption values. 2) The City of Martinez has a large reserve of authorized water revenue bonds which should be ample to cover future needs as they arrive. A total of \$6,000,000 in water revenue bonds were authorized by the electorate in 1966. Of this amount two issues, series A and B bonds, in the amount of \$3,250,000, have been issued prior to 1976. Series C bond, in the amount of \$1,350,000, was issued in 1976 to cover improvements as recommended by Carollo. Projected net revenues of the system are anticipated to more than cover the annual average bond service. ("Official Statement" for the City of Martinez, 1976). The \$1,400,000 remaining in the 1966 bond authorization should adequately cover unforeseen future improvements due to increased population.

Water Quality - Effects of Drought

As mentioned in the other sections of this report, certain facets of water quality within the Martinez Water System is controlled at the Water Treatment Plant. Many quality problems are treatable. For example, acidity may be reduced with the addition of chlorine; alkalinity may be reduced with the addition of caustic soda; turbidity may be reduced with the addition of alum, a precipitating agent (Fredrickson, CCCWD). However, existing treatment facilities are not equipped to control salinity. Current known processes for reducing salinity are too costly to be practicable. These methods include distillation and demineralization (Fredrickson).

The effects of increased salinity on the general public is not well understood (Gerow, County Health Department). Some persons have a known physiological intolerance to sodium (the common form of salt is a combination of sodium and chloride). Others may have the same problem but may not realize it. Most persons suffering from sodium intolerance are middle-aged or older (Gerow). Other health problems, as listed in Table IV, may be accentuated by higher

than normal concentrations of salts and minerals. Table 7, "Health Effect's Guideline", is largely reproduced from a recent County Health Department publication.

Increased salinity may affect industry, vegetation, and wildlife as well as the general public. Saline water often causes salt build-up in industrial systems; additional water is required to purge these systems more often than usual. Many plant species, including agricultural crops, are sensitive to high salt concentrations and fare very poorly during drought conditions. Wildlife, particularly estuarine and fresh water species, may be severely affected as salt water intrudes further into the Delta and changes environmental conditions.

The Martinez Water Treatment Plant monitors chloride levels (as well as other substances) on a daily basis (Pease, City of Martinez). Chloride levels have never been above 250 ppm (the U.S. Public Health Service minimum standard). The maximum chloride concentration reached so far this winter was 224 ppm, which was recorded on January 12, 1977. The average chloride concentration at the Treatment Plant over the past few months has been 185 ppm (Pease). In comparison, chloride concentration in East Bay Municipal Utility District water has recently averaged 7 ppm (Simpson, EBMUD).

If drought conditions continue and chloride concentrations exceed 500 ppm, consumers may find it advisable to use an alternate water supply for drinking purposes, i.e., bottled water. Unless a person is particularly sensitive to chloride, sodium, or other substances as listed on Table 7, the water will not be harmful. Rather, the taste of the water due to concentrated minerals and salts will be very poor.

Project Service

The proposed County Detention Facility site is located within Zone I of the water distribution system of the Martinez Water System. A 12" transmission line is located beneath Pine Street, which bisects the site (See Figure B). This 12" line generally serves the County Civic Center buildings, residential areas to the east and south, and commercial buildings to the west. The City of Martinez has verified that the 12" line is adequate to supply the estimated water consumption requirements of the Detention Facility in addition to existing consumers (Morris, Martinez).

Impacts

1. The estimated water supply demand of the proposed Detention Facility is 70,000 gpd with a peak demand of 600 gpm. Landscape irrigation will require approximately 10,000 gpd of the total demand (Voelz, Bentley Engineers).
2. In 1975, the average daily water consumption of the existing jail was 11,100 gpd at a cost of approximately \$7.00 per day. Based on these figures and the estimated 70,000 gpd demand, water service to the proposed Facility will cost approximately \$44.50 per day, or \$1,340 per month.

HEALTH EFFECTS GUIDELINE

Chemical Element	Potable. No Ill Effects Expected. Taste may be noticeable	May Become Health Hazard* for Special Cases if Consumption Maintained	Use and Other Source if Available	Average Concentration on 1/25/77. (CCCWD Treatment Plant)
Nitrate NO_3	0-10 ppm	10-40 ppm	40 ppm and above	3.4 ppm
Sodium Na^+	0-200 ppm	200-1000 ppm	1000 ppm and above	95 ppm
Magnesium Mg^{++}	0-600 ppm	600-1000 ppm	1000 ppm and above	35 ppm
Calcium Ca^{++}	0-50 ppm	50-200 ppm	200 ppm and above	14 ppm
Potassium K^+	0-1000 ppm	1000-2000 ppm	2000 ppm and above	6.1 ppm
Chloride Cl^-	0-250 ppm	250-500 ppm	500 ppm and above	140 ppm
Total dissolved solids	0-500 ppm	500-1000 ppm	Over 1000 ppm	429 ppm

*Cardiacs, those with renal diseases, hypertensives, calcium restricted diet, sodium restricted diet, and pediatric formulas.

Existing published standards pertaining to this subject are non-existent or unavailable therefore, the data contained in this table represents our best judgement in providing a guide for your use.

Each individual or patient will have any personal physiological variations and if concerned further advised to consult their own physician.

Households utilizing home water softeners and persons on sodium restricted diets need to be concerned with the increase in sodium that will be found in their water system during this critical period.

Source: Contra Costa County Health Department, January, 1977.

3. All existing water lines within the Detention Facility site (Green, Thompson and Pine Streets) will be removed and/or abandoned during construction of the proposed Facility.
4. A new 12" transmission main will be installed beneath the Pine Street road diversion from Mellus Street to Main Street to replace the existing Pine Street main. A new 6" distribution line would also be installed on the north-erly end of Willow Street. The cost of this work has been estimated at \$60,000 (Voelz, Bentley Engineers).
5. The future of the Contra Costa County Water District 18" main beneath Pine Street which serves Port Costa is uncertain. Negotiations are currently underway between CCCWD and the City of Martinez regarding the abandon-ment of that main, and the transfer of Port Costa service to the City Water System (Morris, Martinez; Tornberg, CCCWD). The City (Morris) has stated that service by the City to Port Costa would be adequate. If this arrangement is made, the existing main on Pine Street will be abandoned and Port Costa service will be continued via the relocated Martinez main discussed in Impact #4. If not, the CCCWD 18" main will be relocated on the Pine Street diversion as well and reconnected to the existing line at Escobar Street. If the Port Costa main is abandoned and the City of Martinez provides water to Port Costa, they will be receiving water treated by the City of Martinez and not by CCCWD.
6. Other than the \$60,000 estimated for work done as discussed in Impact #4, the cost of water line relocations is uncertain at present, and will particularly depend on the outcome of the negotiations between Martinez and CCCWD. Discussions are currently underway to determine the proportionate funding of the relocation work among the agencies involved (County, Martinez, CCCWD).
7. Unless the current drought continues for a number of years, decreasing water quality is not likely to significantly affect the health of inmates. Most persons who are sensitive to sodium, or who suffer other problems listed on in the "Health Effects Guideline" Table 7, are either quite old or very young (Gerow, County Health Department). Since nearly all existing inmates are within the 18 - 50 age range, the number having such health problems is likely to be small. It should be recognized that the salt content of Contra Costa Canal water is expected to worsen (estimates of up to 400 ppm have been suggested).
8. Poor water quality may have other adverse effects, however. Salty water may deteriorate the health of plants used in landscaping. Also, the taste of water becomes increasingly noticeable (poor) as the concentration of salts and other minerals increase. Inmates and staff may strongly object to drinking bad-tasting water, whether they are told it is not harmful or not. The cost of supplying bottled drinking water as an alternate supply would be quite high. Alhambra National Water Company of Vallejo, typical of other local suppliers, charges approximately \$3.15 per 5 gallon bottle (prices fluctuate) and a monthly water cooler rental charge of \$5.15 per cooler. Based on one quart per person per day, supplying bottled drinking water for all inmates might therefore cost over \$2000 per month or \$24,000 per year.

Mitigating Measures

1. Potential problems regarding water system capacity in the region of the proposed Facility have been mitigated to a large extent by the closure of the Martinez Food Cannery in 1972. The Cannery, once the system's largest consumer, used an average of 576,000 gpd in 1972. This amount is sufficient to supply the needs of Port Costa (40,000 gpd), Port Costa Brickworks (260,000 gpd), the future Martinez Waterfront (5,000 gpd), and the Detention Facility (70,000 gpd), with a remaining average excess of 200,000 gpd.
2. To save costs of water line relocation work as well as to eliminate the existing "dual system", CCCWD should seriously consider abandoning its service to Port Costa and transferring the responsibility to Martinez Water System.
3. A variety of water conservation measures are available, which could either be built into the Facility or applied voluntarily upon occupation. The estimated consumption of 70,000 gpd could be considerably reduced if some or all of the following measures are applied:
 - a. Use flow controls on showers and water taps.
 - b. Use fixtures (showers, faucets, etc.) that incorporate push button, measured-flow control design.
 - c. Use low-flush toilets. Currently being manufactured, these will become mandatory by the State in new construction in 1978 (Simpson, EBMUD).
 - d. Promote voluntary conservation measures, which generally incorporate the use of minimum amounts of water at all times.
 - e. Do not plant landscaping until the current drought has ended. When landscaping is planted, use climate-adapted, drought-resistant plant species.
4. During times of poor water quality due to drought, inmates should be questioned and/or tested regarding sodium tolerance and other health problems as listed in Table 7. Those who are or may have any of these problems should be supplied with bottled water for drinking purposes. Bottled water should be supplied to all inmates if the taste of drinking water becomes intolerable.

NATURAL GAS AND ELECTRICITY

Introduction

Both electricity and natural gas will be supplied by the Pacific Gas and Electric Company (PG&E). PG&E's local business office is located at 910 Main Street in Martinez. Electricity and natural gas are currently proposed to be major energy sources for the proposed Detention Facility. However, recent energy curtailments and questions of continued supply, particularly of natural gas, may cause the proposed usage to change before the Facility is constructed, or after occupancy. Recent rulings on and estimation of future energy supplies are mentioned in this section, and are discussed in more detail in the Energy Chapter, number 15.

Existing Service

Electricity

PG&E has stated that existing service capacity in the area of the proposed Detention Facility is adequate to serve the electricity needs of the Facility in addition to existing consumer needs (Hove, PG&E). Existing service in the area includes overhead electrical lines on Mellus, Willow, Green, Thompson, and Court Streets. Underground lines currently exist only on Pine and Ward Streets in the immediate area of the proposed Facility. Information is not available on power supply for and existing consumption in the area (Hove).

Natural Gas

PG&E (Hove) has also stated that existing service capacity in the area of the proposed Facility is adequate to serve Facility needs in addition to existing needs. To clarify, the existing underground gas lines are of sufficient size to supply all needs if natural gas is available. Recent California Public Utilities Commission (CPUC) rulings have limited customer consumption and, more important, natural gas in short supply -- both short-term and long-term. Existing gas service lines in the site vicinity are located under all streets and vary in size from 2" in diameter to 6" in diameter.

Project Service

Electricity

The local power supply for the proposed Facility would come from an existing underground transformer vault beneath Ward Street. Service to the Facility would be underground. Prior to construction, all existing overhead lines within the project will be removed. Service to residential areas east of the site will be relocated to existing overhead lines on Susana Street until such time as PG&E can underground this service on Mellus Street (during the last phases of Facility construc-

tion). Service to existing customers outside the project site will not be disrupted (Hove).

During the construction of the proposed Facility, PG&E will underground existing overhead electrical lines on Mellus, Willow, and Court Streets. PG&E will also install underground site service from the transformer vault under Ward Street. In order to accomplish this work the County must form an underground utility district, within which PG&E may use "Rule 20" funds to cover costs incurred. Rule 20 is a California Public Utilities Commission regulation which generally states that each utility company (e.g., PG&E) must set aside money from profits to make improvements on existing electrical systems. Formation of utility districts is a pre-requisite to the use of these funds.

Natural Gas:

Natural gas will be furnished to the proposed Facility via a 3"-diameter line connection to an existing 6" line on Pine Street. The 6" line currently serves all residences and public buildings east and west of Pine Street, including the existing main jail and the County Administration Building. All existing gas lines within the Facility site will be abandoned prior to construction of the Facility. Service to existing customers will not be interrupted; rather, the service will be routed through the existing gas line network surrounding the site.

Estimated Usage

Detailed architectural and engineering design of the proposed Detention Facility has not yet been determined. As a result, specific estimates of electricity and natural gas usage within the Facility cannot yet be made (Voelz, Bentley Engineers). However, rough estimates have been calculated. Based on current and expected future conditions, Bentley and Associates Consulting Engineers have generally made the following recommendations for use of electricity and natural gas within the proposed facility:

1. Electricity should be used for all lighting; pumps for heating, ventilating and plumbing systems; office equipment; air conditioning; and some kitchen and laundry appliances. In addition, electrical outlets will be provided as a back-up energy source for recommended natural gas uses in the kitchen and laundry.
2. Natural gas should be used for all cooking and some laundry facilities (e.g., clothes dryers), and for partial space heating in combination with fuel oil.

The above recommendations are based on several assumptions which have not yet been assured. These include: 1) a solar collector system will be the major energy source for water heating (with a fuel oil back-up system for poor weather conditions); 2) a comprehensive heat-reclaim system will serve to conserve a substantial amount of energy used for space conditioning; 3) the building will contain less than 180,000

square feet of heated space; 4) windows on perimeter walls of the Facility will cover less than 20% of the total area; 5) exterior walls and roof areas will have very good insulative values.

According to Robert Voelz of Bentley Engineers, the "ideal" recommended space heating system would use natural gas as the major energy source except in times of gas shortages (i.e., winter months), when fuel oil would be used (Voelz, Bentley Engineers).

Bentley Engineers currently believe that if all of the above assumptions are true, the use of natural gas for the partial space heating energy source is feasible. The final decision will be made when all specific architectural and engineering design features are known, and it can be accurately estimated that the recommended usages will not require more than 50,000 cubic feet of natural gas per day. This figure is the maximum allowed by CPUC (see Energy chapter). If the specific design is estimated to require more than 50,000 cubic feet of gas per day, the proposed Detention Facility will probably use natural gas only for cooking and laundry facilities, and the energy source for space heating will probably be provided by fuel oil.

Design Loads

Electricity:

Robert Voelz of Bentley Engineers has estimated the following "peak hour" demand loads for electricity, where KWH equals "Kilowatt-hour", meaning the amount of energy equal to that expended by one kilowatt in one hour:

<u>Usage</u>	<u>Peak Hour Demand</u>
Lighting	400 KWH
Pumps for heating, ventilating, and plumbing systems	600 KWH
Office Equipment	200 KWH
Air conditioning	400 KWH
Kitchen	<u>300 KWH</u>
Total	1900 KWH

Actual total demand 1000 - 1200 KWH

Although the total additive peak hour demand load is 1900 KWH, it has been estimated that the actual peak hour demand will be only 1000-1200 KWH. This difference is due to the fact that some uses such as air conditioning equipment will not be operating at the same time as other uses, such as heating system pumps (Voelz).

The yearly total amount of electricity usage has been estimated at 6,581,425 KWH. This total amount has been broken down on a monthly basis, as shown on Table 8. The estimated cost for electrical energy for one year, based on current rates, is \$131,630 (Voelz).

Natural Gas:

Due to the lack of a specific building design and the resulting uncertainty of the usage of natural gas, peak-hour and peak-day loads have not been estimated (Voelz). However, an estimated annual total gas usage was made which was based on the use of gas for kitchen, laundry, and space heating (with no fuel oil), and the inclusion of solar and heat-reclaim systems. This total annual estimated usage is 119,055 therms, as is shown on TABLE 8, or approximately 11½ million cubic feet of natural gas. The estimated annual cost for gas for a gas-fired heating system is \$19,050. This figure does not include kitchen and laundry uses, and, most important, is based on today's rates. Natural gas prices are expected to markedly increase in the next few years.

Other Energy Sources

Bentley Engineers has recommended that, faced with expected natural gas price increases and general shortages, the Detention Facility should include fuel oil as an alternate energy source (Voelz). In other words, systems should be designed so that fuel oil may be used in place of natural gas if necessary. This essentially means that duplicate systems must be constructed, because gas and oil systems are not entirely interchangeable. At this time fuel oil is a less preferred fuel because it is less efficient, is harder to store, is more expensive, and generates more air pollution than natural gas. However, it appears to be the most realistic alternative to natural gas available at present. On the other hand, fuel oil costs are also expected to markedly increase in the next few years; ASHRAE (American Society of Heating, Refrigeration, and Air Conditioning Engineers) has estimated that fuel oil costs will increase 500% in the next 30 years.

In response to these uncertainties and energy conservation in general, the use of a solar-powered water-heating system and a heat-reclaim system has been considered. The use of both or either of these systems would reduce oil and/or gas usage. However, installation of these systems would create additional cost factors. Mr. Voelz has estimated that savings gained by these energy conservation measures may pay back installation costs in 10 to 20 years. As fossil fuels increase in cost, the "first cost" solar systems become more attractive and will pay back at a more rapid rate than suggested above.

Impacts

1. General estimates of electricity usage within the proposed Facility include: 1) The use of 6,581,425 KWH per year. This is roughly equivalent to 22,508 therms. 2) An annual cost, of current rates, of \$131,630 (\$10,970 per month).

TABLE 8
ESTIMATED ENERGY SOURCE USAGES

Annual Estimated Fuel Oil Usage for Heating and Electrical Usage
(Assuming Natural Gas Used Only for Kitchen and Laundry; No solar
or Heat-Reclaim Systems)

<u>Month</u>	<u>Gallons Oil</u>	<u>KWH Electrical</u>
January	17,050	498,280
February	14,350	450,000
March	13,340	533,965
April	11,275	517,975
May	9,690	569,750
June	7,820	553,660
July	6,990	587,645
August	6,935	623,330
September	6,830	607,235
October	8,575	587,645
November	12,440	553,660
December	16,040	498,280
	<u>131,335</u>	<u>6,581,425</u>

Estimated annual costs = \$49,890 for oil; \$131,630 for electricity.

Annual Estimated Natural Gas Usage for Heating and Electrical Usage
(Assuming No Fuel Oil Usage for Heating; Inclusion of Solar and Heat-
Reclaim Systems)

<u>Month</u>	<u>Therms Gas</u>	<u>KWH Electrical</u>
January	15,430	498,280
February	13,000	450,000
March	12,100	533,965
April	10,230	517,975
May	8,790	569,750
June	7,060	553,660
July	6,360	587,645
August	6,290	623,330
September	6,200	607,325
October	7,780	587,645
November	11,265	553,660
December	14,550	498,280
	<u>119,055</u>	<u>6,581,425</u>

Estimated annual costs = \$19,050 for gas; \$131,630 for electricity.

Source: Donald Bentley and Associates Consulting Engineers, Nov. 15, 1976.

2. The use of natural gas as a major energy source has not been thoroughly evaluated. A recent ruling by the California Public Utilities Commission, which limits the maximum amount of gas any building may consume to 50,000 cubic feet per day (approximately 516 therms), in addition to expectations of future price increases and gas shortages, may curtail the use of this efficient fuel.

If natural gas is used for space heating as well as for cooking and laundry needs, it has been estimated that the Facility may consume 119,005 therms per year (assuming the inclusion of solar energy and heat-reclaim conservation measures). The annual cost for heating with gas has been estimated by Robert Voelz of Bentley Engineers. Based on current rates this cost would be \$19,050 per year (\$1,590 per month).

3. The use of fuel oil for heating purposes would be expensive (at current rates), inefficient, and would possibly generate pollutants. If fuel oil is used for space and water heating without the inclusion of solar and heat-reclaim measures, the annual oil usage has been estimated at 131,335 gallons, or roughly 190,414 therms by Mr. Voelz. The annual cost of this use at current rates and without energy conservation measures has been estimated at \$49,890 (\$4,160 per month).
4. The use of fuel oil as a major energy source may require a permit from the Bay Area Air Pollution Control District (BAAPCD). A permit is required if the use is classified as industrial, or, if a non-industrial use exceeds 10 million BTU per hour (Golwin, BAAPCD). The proposed Detention Facility has neither been classified as industrial nor non-industrial. Fuel oil usage estimations for January (TABLE 8) can be calculated as an average of over 3 million BTU per hour. As these estimations are very rough, the possibility that an hour's consumption exceeds 10 million BTU exists.
5. A fuel oil energy source for heating would require the installation of two underground oil-storage tanks of approximately 12,500 gallons capacity each to provide sufficient storage for at least 2 weeks. This would also be necessary if fuel oil is used as a back-up energy source to natural gas. The existence of these tanks would create a public safety hazard that is not associated with natural gas. (The supply to broken gas lines can be shut off a relatively short distance from the break.)
6. A constant supply of fuel oil may be difficult to obtain. Apparently, supply and demand of #2 fuel oil, the type required by BAAPCD, fluctuates widely throughout the year (Harvey, Shell Oil Co.). Some companies, such as Shell Oil, may bid on a contract to supply the County only if a supply is available at the time of bid. Even then, contracts may be short-term and prices could widely vary. Other companies, such as Union Oil (Lee) appear reluctant to commit a given amount and, like Shell Oil, will decide whether or not they will bid only after the supply or availability is known.

7. Existing overhead electricity lines will be removed from the project site. Service to existing customers east and south of the site will be relocated to an overhead line on Susana Street until the Mellus Street line can be undergrounded during the last stages of construction. This impact will not be significant, as local service should not be interrupted (Hove, PG&E).
8. Existing gas lines within the project site will be abandoned. This impact is insignificant as existing local service will not be disrupted. Local consumers which surround the site will receive service from the existing surrounding gas line network. The 6" line on Pine Street will be diverted to an existing 2" line on Court Street by means of a new 3" line to be located under the proposed Pine Street Diversion.
9. State and federal regulations (e.g., "Title 24" of the State Administrative Code) may limit certain energy conservation measures, as they mandate certain minimum design features. Title 24 regulates such features as amounts of wattage for lighting per square foot and the amount of air circulation within rooms, as well as many other construction factors.

Mitigation Measures

1. The specific architectural and engineering design of the proposed Detention Facility should be coordinated with proposed energy conservation measures. These measures include a solar collection system for water heating and a heat-reclaim system for reclamation of exhaust air energy (heat), as well as many other measures which are suggested in Chapter 15 on energy. Energy conservation measures should not be attempted to be included after the Facility is designed. Most energy experts feel it is much more efficient and less expensive to design for energy conservation than be committed to a course of "retrofitting" for conservation.
2. A fuel oil heating system should be incorporated in the design of the structure to serve as an alternative energy source to natural gas. A fuel oil generator system should also be provided to serve as a back-up energy source to electricity in areas of critical concern (for inmate and staff safety, security, etc.). However, the use of fuel oil should be kept to a minimum.
3. The Bay Area Air Pollution Control District (BAAPCD) has stated that the required type of fuel oil for use by the proposed Detention Facility would be #2 Fuel Oil with less than $\frac{1}{2}\%$ by weight sulphur content (Golwin, BAAPCD). This product may be available from local oil refineries (Harvey, Shell Oil Co.). If #2 fuel oil can be obtained on a reliable basis, the use of this type of fuel oil, in combination with maximum equipment maintenance, would minimize pollutant emissions from fuel oil-powered systems. It should be determined whether or not the potential use of fuel oil for all space heating would require a permit from BAAPCD.

4. The matters of fuel oil availability and estimated future costs, natural gas availability and future costs, the costs of installing a dual heating system (gas/fuel oil), and all types of feasible energy conservation measures should be thoroughly evaluated before a detailed building design is determined.

TELEPHONE

Introduction

Telephone service will be furnished by Pacific Telephone and Telegraph Company (PT&T). PT&T's local business office is located at 609 Las Juntas Street, Martinez. Service to the existing County buildings within the Civic Center was upgraded in early 1976 with the installation of the direct-dial "centrex" system. Service for the centrex system originates on the seventh floor of the County Administration Building.

Existing Service

Most existing telephone lines in the area of the Detention Facility site are overhead lines. These overhead lines generally serve the residential areas within the site and east and south of the site. Underground telephone cables occur under most of Ward Street, north of the site, and under Pine Street north of Green Street.

The Pine Street telephone cable extends through the middle of the site. A 200-pair cable, which may serve 200 telephones, is enclosed within a conduit which is buried approximately 30 inches underground to Green Street. South of Green Street the line is overhead. There is capacity within the conduit for several additional telephone cables. In the past the 200-pair cable served County offices within the Contra Costa County Employees Federal Credit Union building at 1111 Pine Street, south of the site. These County offices were recently vacated, as the employees were moved to the County Administration building. Currently, the 200-pair cable, which originates on the seventh floor of the Administration building, is not in use.

Project Service

Telephone service for the proposed Detention Facility will be coordinated with the direct dial centrex system within the County Administration building. The County Public Works Department has estimated that 150 telephones will be required within the Detention Facility. The existing facility has 12 to 15 telephones. The Pine Street cable is proposed to serve the new Facility; it will not extend beyond the Facility.

Impacts

1. Telephone service to the existing facility costs approximately \$230 per month. Irene Bartlett of PT&T has estimated that service to the proposed Facility will average \$15 per month per telephone, or \$2,250 per month for 150 telephones.
2. Existing overhead telephone lines within the project site will be removed. These include lines on Green and Thompson Streets between Willow and Court Streets and on Pine Street south of Green Street.
3. Overhead lines on Mellus Street, south of the site, will be removed. The service will be relocated to existing overhead lines on Susana Street to facilitate continuing residential needs until an underground line can be installed under Mellus in the last stages of construction.
4. Overhead lines on Court and Willow Streets will be removed and new lines will be placed underground. The existing overhead line on the east end of Ward Street will also be relocated underground.
5. Grading on the Detention Facility site may necessitate removal of the Pine Street underground conduit, as the cable is buried only 30 inches deep. A new conduit would be installed at a new level after final grading.

Mitigation Measures

1. Coordinate the removal and/or relocation of all telephone cables with other utilities to reduce costs and expedite the activities.
2. Although the Pine Street conduit may necessitate removal, PT&T has indicated that the cable can be retained to serve the Facility within a new conduit to be installed during construction of the Facility (Rowe, PT&T).
3. Minimize the number of phones within the Facility to reduce monthly service charges.

TELEVISION AND RADIO

Introduction

Televents, Incorporated, located in Martinez, provides cable television and radio services within its franchise area. This area is generally bounded by the Carquinez Strait on the north, Interstate 680 on the west, State Highway 24 on the south, and the Briones Hills on the east. This area includes both incorporated and unincorporated areas of Martinez, Pleasant Hill, and Lafayette. Some unincorporated areas of Walnut Creek and the community of Orinda are also within Televent's franchise area (McNay; Televents, Inc.).

Televents currently provides service to 25,000 customers. Service expansion is limited by the geographical area for which the company is franchised. Expansion, therefore, consists of extending service to new customers within the franchised service area. The average number of new customers in recent years has been 350 per year. The maximum number of customers is estimated at 28,000 to 30,000; Televents expects this maximum coverage to be reached within 5 to 10 years (Shelby; Televents, Inc.).

Description of Service

Televents owns, operates and maintains the entire cable service network for its franchise. This network includes a large antenna and associated transmitters on a high hill near Lafayette, and the transmission system itself. The system basically consists of trunk and feeder lines, amplifiers, taps and signal splitters. The entire network currently transmits a 12 channel television signal at 40 decibels* into the main trunk lines. Radio service is transmitted within the same network and signal strength.

The television signal is carried first on trunk lines which can carry a transmitted signal for 1800 feet before an amplifier must be installed to increase the signal. The minimum desirable signal strength in trunk lines is 20 decibels. Feeder lines carry the signal from the trunk lines to a distribution point, and then to the viewing station (i.e., TV set). Transmission lines can be located either above ground or underground. Service to newly developed areas is underground. New service to an existing developed area may be above ground or underground. Taps and splitters are devices used to connect trunk lines to feeder lines, feeder lines to distribution points, and distribution points to viewing stations (TV sets).

The minimum strength signal required to produce a clear television picture is .3 decibels. The television signal is divisible in two ways. The first way is to connect the feeder line to a series of viewing stations with each station being connected directly to the next station. When connected in this way, each succeeding viewing station receives one-half the signal of the preceding viewing station. The second method is to connect the feeder line to a main distribution panel, with outlets for each viewing station. Each station is then connected directly to the distribution panel with a minimal amount of signal loss.

Project Service

The area near the County Civic Center Detention Facility site is served by two existing Televents, Incorporated cable television and radio trunk lines. One line is located on Escobar Street. The second line is located on Mellus Street. Both lines are overhead lines which are supported by Pacific Telephone Company poles. The Mellus Street line will be used to serve the proposed Detention Facility because it is immediately adjacent to the project location and the signal strength is the stronger of the two lines (McNay; Televents, Inc.).

*A decibel in this sense is a unit used to describe the strength of an electric signal.

Cable television and radio service will be extended to the Detention Facility from the Mellus Street trunk line near Willow Street. A new feeder line will be installed underground and will terminate at a main distribution point within the Facility. Mr. McNay of Televents, Inc. has stated that the Mellus Street trunk line has a signal strength which is adequate (above 20 decibels) to serve the Facility in addition to existing customers. Amplifiers may be necessary on the feeder line to provide adequate strength for each television set and for necessary radio connections. Electrical power, for the amplifiers, is supplied by the Pacific Gas and Electric Company.

The current design of the Detention Facility (2/4/77) includes provisions (outlets) for 8 television sets in each of the nine housing modules. However, it is expected that only 4 sets will be installed in each module at the time of occupancy of the Facility. Other sets will be provided if needed. The Department of Public Works has estimated that a maximum of 25 to 35 sets will be in operation at one time, and a maximum of 50 sets will be necessary in the entire Facility.

It is not known at this time how many radios will be connected to the cable service. Music may be piped from a single source to all housing modules, each module may have an individual radio, or each module may have many radios with cable service. Specific outlets for radios are not necessary, as they can be connected to television cables. However, additional costs for the radio service can be expected.

Impacts

1. The cost of cable television and radio service would be relatively insignificant. Televents, Inc. currently charges \$6.00 per month for a first outlet to any one customer, \$2.50 per month for each additional television outlet, and \$1.00 per month for each radio receiving cable service. The County estimates a maximum of 50 installed televisions. Although unlikely, a maximum of 50 radio connections might also be assumed. At current rates, the monthly charge for cable television and radio service will not exceed \$177.50.
2. Installation and use of a new underground feeder line to serve the Facility will tap existing signal strength that currently serves residences east and south of the project site. However, existing capacity is great enough so that existing service would not be adversely affected.
3. The use of cable service is a positive impact in that the possible use of an unsightly external antenna is avoided, and the quality of service (i.e., signal strength) is high.
4. A disruption of power from within the Detention Facility would not affect existing residential service (McNay; Televents, Inc.).

Mitigation Measures

1. The County could reduce minor cable service costs by reducing the number of television sets and radios within the Facility. The use of a single radio served by the cable could reduce the cost by up to \$49 per month. However, a single radio piped to all modules would limit the types of music played and would cost more for control panels, wiring, and speakers. As radio hook-ups to television cable outlets may be made at any time, radios could be installed as are desired by the inmates.
2. Installation of the new feeder line will be coordinated with other utility installations to reduce construction congestion.

FIRE PROTECTION

Introduction

The proposed Detention Facility is within the Contra Costa County Consolidated Fire Protection District (CCFPD). The District provides fire protection services within most of central Contra Costa County. The fire stations nearest the Detention Facility site are Station #14, located at 521 Jones Street and Station #12, located at 1240 Shell Avenue. Both are in Martinez. Station #14 is less than one-half mile southwest of the site (by street), while Station #12 is approximately one mile southeast. CCFPD (Nielsen) and the City of Martinez (Morris) agree that there is adequate service capacity to serve the proposed Facility without diminishing service to existing demands.

Existing Service

Fire hydrants are located on corners of nearly all street intersections within and immediately surrounding the project site (one hydrant per intersection). Exceptions are the corners of Willow and Ward Streets, Willow and Green Streets, Willow and Mellus Streets, and Court and Mellus Streets (Nielsen, CCFPD). The reason for these exceptions is the difference in hydrant requirements in commercial and residential areas (minimum distance between hydrants is 300 feet in commercial areas and approximately 500 feet in residential areas).

Water supply to fire hydrants within the vicinity is from Martinez Water System transmission or distribution lines. A 3"-diameter line connects each hydrant to a local water system line.

The local fire alarm system is powered by existing overhead electrical lines which are supported by Pacific Telephone poles along Pine Street.

Project Service

Inspector Robert Frost of CCFPD has stated that fire hydrants must be located a minimum of 300 feet apart to adequately serve the proposed Facility. Site locations for new hydrants have not yet specifically been determined. New fire hydrants will be connected to new or existing water lines via 3" connection lines. The existing fire alarm line on Pine Street will be relocated on Willow Street to continue existing needs; the proposed Facility will use an interior phone-type alarm system. Types and locations of interior fire protection devices cannot be specified until detailed building plans are available (Nielsen, CCFPD).

Impacts

No significant impacts relating fire protection service are known or foreseen. Hydrant and fire alarm installations or relocations will be coordinated with other construction and will be comparatively insignificant.

Mitigation Measures

None are suggested. Adequate fire protection measures will be required by the Contra Costa County Consolidated Fire Protection District.

SOLID WASTE DISPOSAL

Introduction

Waste disposal in central Contra Costa County is shared by eight private collectors serving Alamo, Benicia (Solano County), Clayton, Concord, Danville, Lafayette, Martinez, Moraga, Orinda, Pleasant Hill, Pacheco, Rodeo, and San Ramon. Martinez Sanitary Service, which would provide service to the proposed Detention Facility, is one of the eight collectors. All solid wastes from this area are hauled by truck to the ACME Fill Corporation landfill located on Arthur Road east of Martinez.

Recent studies have indicated that ACME Fill landfill will be the primary solid waste disposal site for central County for at least the next forty years. These studies include the Preliminary Refuse Disposal Plan, an adopted part of the Utilities Element of the General Plan for Contra Costa County, adopted by the County Board of Supervisors September 4, 1973; the comprehensive Contra Costa County Solid Waste Management Report (SWMR), 1975; and the Contra Costa County Solid Waste Management Plan (SWMP), 1976 which was based on SWMR and was approved by the Board of Supervisors March 3, 1976.

The ACME Fill service area currently covers 474 square miles in central Contra Costa County and Benicia in Solano County (see Figure 4). The landfill, begun in 1958, contains 536 acres and has an estimated available volume of 850 million cubic feet (SWMR). In 1975, the estimated total amount deposited at ACME Fill was 1136 tons per day (SWMR). The composition of solid wastes delivered to landfills in Contra Costa County is summarized in Table 9.

Figure 4

Present Solid Waste Service Area Boundary



Source: Central Contra Costa Wastewater Management Program EIR/EIS, Central Contra Costa Sanitary District 1976

Table 9

COMPOSITION OF CONTRA COSTA COUNTY SOLID WASTES
Percent by Weight of Wastes Delivered to Landfill

	Residential			Average countywide	Commercial- industrial
	West (1)	Central (2)	East (3)		
Paper					
Newspaper	10	--	--	9	5
Corrugated	7	--	--	6	35
Other	38	--	--	35	25
Total	55	43.0	48	50	65
Garbage	5	11.5	5	5	5
Yard, garden wastes	7	13.5	20	15	--
Metals					
Ferrous	--	8.0	4	7	4
Nonferrous	--	--	1	--	--
Aluminum	--	0.8	--	0.9	0.8
Other	--	0.5	--	0.1	0.2
Total	10	9.3	5	8	5
Glass, ceramics	12	10.0	10	10	8
Plastics	5	5.0	2	2	3
Rubber	--a	--b	1	1	1
Leather, textiles	--a	--b	1	2	3
Wood	--a	--b	1	1	4
Other nonclassified	6	7.7	7	6	6
Grand total	100	100	100	100	100

a. Included in total for other nonclassified.

b. Included in total for plastics.

Two types of reclamation are currently occurring at the ACME Fill landfill: 1) Los Angeles By-Products operates a tin can separator machine which recovers approximately 300 tons of ferrous metals per month, 2) ACME Fill Corporation separates large, high value items by hand (appliances, machinery parts, etc.) and recovers approximately 100 tons of ferrous metals and 6 tons of aluminum per month (SWMR). A summary of other recycling activities in the County is shown in Table 10.

The Solid Waste Management Report calculated that, if present disposal practices continue the present capabilities of ACME Fill will be exhausted by the year 2010. Other landfills in the County would be filled by the following years: West County Fill (Richmond), 2010; Pittsburg, 1980, GBF (Antioch), 1980.

The long range management plan recommended in the County Solid Waste Management Plan would utilize extensive material recovery programs and energy recovery facilities and would limit the county landfill sites to ACME Fill and Richmond. Figure 5 is a diagram of this plan. Implementation of this plan will result in a greater than 25% reduction in waste disposed in landfills, and no new landfills would be required through the end of the year 2020 (SWMR). Figure 6 depicts projected population and solid waste volumes upon which this long range plan was based.

Project Service

The proposed County Detention Facility would be served by Martinez Sanitary Service (MSS), a private, franchised collection company. MSS collects wastes within the city limits of Martinez. Waste would be hauled approximately 4 miles east of the ACME Fill landfill.

MSS collection vehicles (trucks) collect wastes from the existing main jail 6 days each week, between 5:00 a.m. and 5:30 a.m. each day. The jail generates approximately 3 yards of wastes per day. The wastes are stored outside the jail in two 1½ yard containers. The trucks hold a maximum of 28 yards of compacted waste (approximately 56 yards loose, Bissio, MSS). The jail is a middle stop of a daily route which begins at the company's service yard near the north end of Berrellessa Street, covers a portion of north Martinez (on Berrellessa Street, Alhambra Avenue, and Main Street), and extends into southerly residential areas along Pine Street. The monthly service charge for the existing service is approximately \$200.

Martinez Sanitary Service has stated that adequate service will be available for the proposed Detention Facility, should it be approved (Bissio, MSS). Monthly costs and pick-up timing will depend on the size of containers to be used and the number of collections per week that are necessary (see Impacts and Mitigation Measures). Solid waste must, under Public Health statutes, be collected a minimum of once per week (Bissio).

Table 10

SUMMARY OF PRINCIPAL RECYCLING ACTIVITIES
Approximate Current Quantity Recovered, Tons per Month

Program	Location	Ferrous metals	Aluminum	Glass	Newspaper	Corrugated paper	Total
Acme Fill (Los Angeles By-Products Co.)	Pacheco	300 ^a	--	--	--	--	300
Acme Fill Corp.	Pacheco	100 ^b	6	--	--	--	106
Coors of Contra Costa	Pittsburg	--	20	--	--	--	20
E.C. Ology	El Cerrito	1 ^c	-- ^d	1 ^e	10	NA	12
Kaiser Aluminum & Chemical Corp. "Can-Do"	Concord	--	19	--	--	--	19
	El Cerrito	--	4	--	--	--	4
	Pittsburg	--	6	--	--	--	6
	Richmond	--	<u>15</u>	--	--	--	<u>15</u>
Subtotal			<u>44</u>				<u>44</u>
Many Hands, Inc.	Pittsburg	-- ^d	-- ^d	6.5	23	19	48.5
Markstein Beverage Co.	Pittsburg	--	6	.3	--	--	9
Pleasant Hill- Bayshore Disposal Co.	--	--	--	24	20 ^f	90 ^f	134
Reynolds Aluminum Recycling Co.	Antioch	--	-- ^d	--	--	--	--
	Concord	--	6	--	--	--	6
	Pittsburg	--	-- ^d	--	--	--	--
	Walnut Creek	--	-- ^d	--	--	--	--
Subtotal			<u>8</u>				<u>8</u>
West Contra Costa Landfill (West Coast Salvage)	Richmond	<u>40</u>	-- ^d	--	--	--	<u>40</u>
Total		441	84	34.5	53	109	721.5

NA = not available.

a. Cans.

b. Appliances, machinery parts, etc.

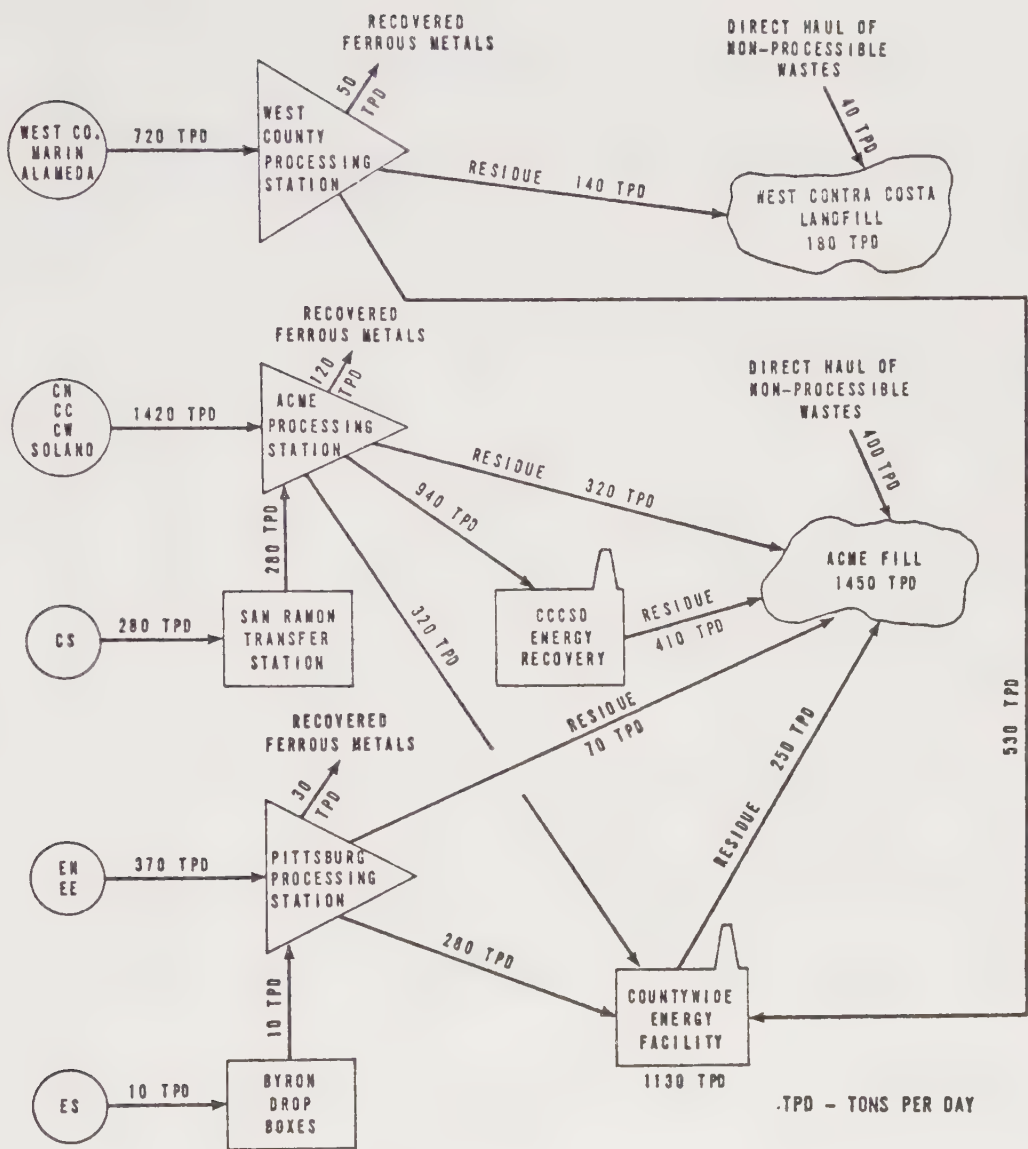
c. Includes bimetal cans.

d. Less than 0.5 tons/month.

e. Estimated.

f. 1974 data.

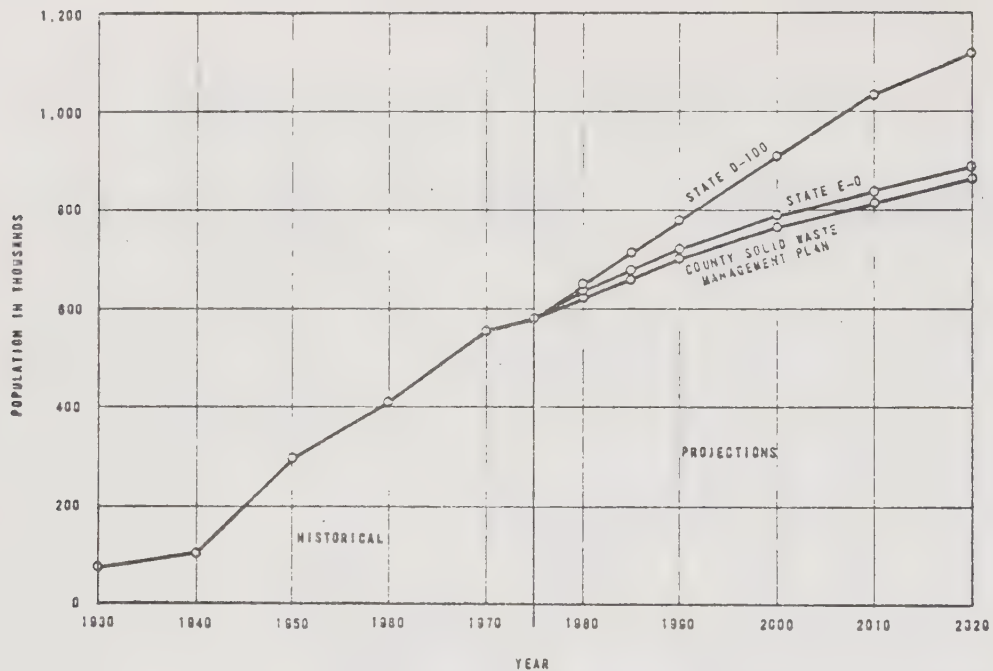
Figure 5



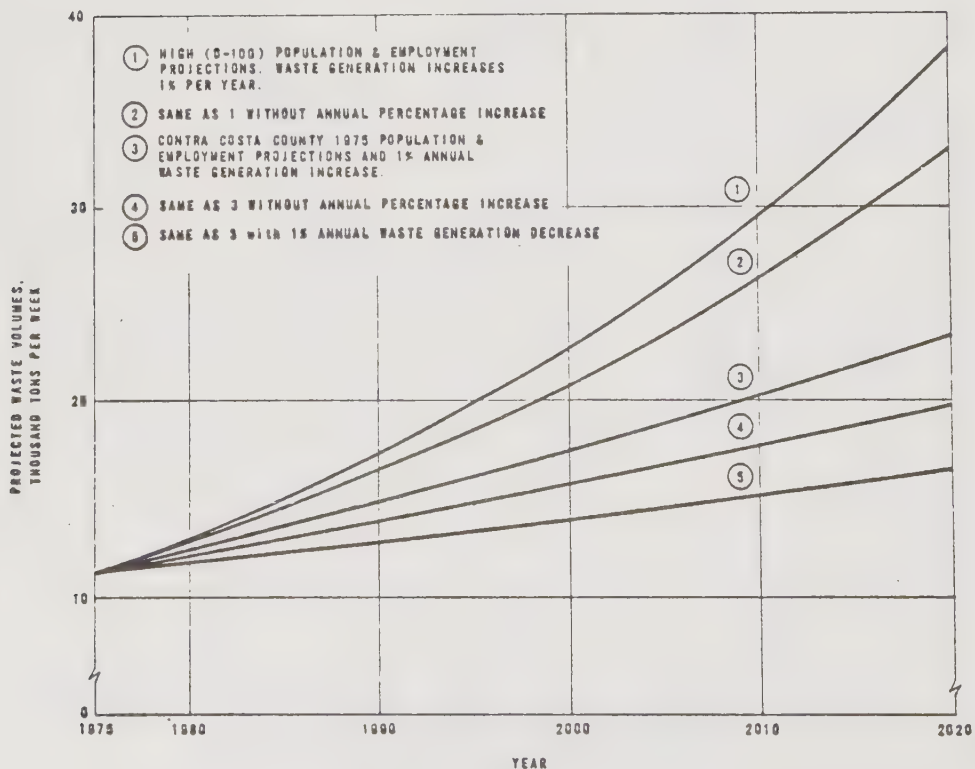
SCHEMATIC SOLID WASTE FLOW DIAGRAM
RECOMMENDED PLAN-LONG RANGE
(1990-2020)

Source: Contra Costa County Solid Waste Management Plan, Nov. 1976

Figure 6



HISTORICAL AND PROJECTED POPULATIONS



SOLID WASTE VOLUME PROJECTIONS

Source: Contra Costa County Solid Waste Management Plan, Nov. 1976

Impacts

1. The existing facility generates approximately 3 yards of waste per day from 200 to 215 persons (staff and inmates). The proposed Facility is expected to contain approximately 525 persons at full capacity. Based on those figures, the Detention Facility could be expected to generate approximately 7.5 yards per day if an on-site waste recovery program is not implemented (see Mitigation section).
2. Service costs would not be a significant impact:
 - a. If the current type of service is extended to the new Facility, the most inexpensive monthly service charge would be approximately \$420. This is based on the use of one 20 yard container which would be collected 3 times per week (Bissio).
 - b. An alternate choice would be the use of a 26 yard compactor machine. The initial installed cost of a waste compactor, supplied by Martinez Sanitary Service, would be approximately \$12,500 with a monthly operating expenditure of \$15 to \$20. The machine could compact a week's waste, requiring only one collection per week. The monthly service charge would be approximately \$350 (Bissio). Based on these costs it might take as much as 20 years before a savings would be realized. Both of these methods would require the use of a non-route system (the truck would make a single stop at the Facility and go directly to ACME Fill).
3. Early morning noise from the collection trucks would affect more outside persons at the new Facility, as it is closer to residential areas than is the existing facility. However, if wastes are collected fewer times per week, i.e., once, the impact would not be significant.
4. A waste recovery program within the Facility (see below) would require some space for recycled materials storage within the jail and minor costs for transferring the materials to a recycling center.

Mitigation Measures

1. Further study should be done to determine if the use of a compactor machine would be economically efficient. If it is (which is likely, as other County buildings such as the County Hospital are using them successfully), this method would minimize the number of required collections per week and associated early morning noise. Storing the waste for week-long periods would not create a health hazard (Bissio).
2. The implementation of a waste recovery program within the proposed Detention Facility should be encouraged. Although commercial markets are currently limited, individual and group recycling is strongly encouraged in the adopted Solid Waste Management Plan. Recyclable

materials such as metals, paper and glass could be hand sorted, stored, and routinely delivered to a community recycling center; or adequate storage bins and associated equipment, such as a glass crusher, could be utilized to retain materials within the Facility until a marketable quantity is reached. Hand sorting could be accomplished by trustees assigned to the Facility. Existing commercial markets are located in the East Bay area. The nearest large-scale community recycling center is located at Pleasant Hill High School, some 10 miles south of the project site. If a waste recovery program is considered, adequate storage facilities should be built into the facilities. Mark Maloney of the University of California Cooperative Community Gardens Project may be consulted for further analysis and recommendations.

MISCELLANEOUS

Medical Services

The County Hospital provides medical services to the existing main jail. Patients are transported to the Hospital, located at 2500 Alhambra Avenue, as they require services.

A different method of health care is suggested for the proposed Detention Facility. It is proposed that County medical staff be permanently assigned to the Facility to provide medical services at all times. This proposed service is discussed in Chapter 2, Project Description.

Community Facilities

Community facilities are located near the proposed Detention Facility which would provide a variety of services for visitors to the Facility. Many types of commercial businesses, including restaurants, banks, drugstores, and retail shops are located on or near Main Street within a few blocks of the Facility site. Most motels in Martinez are on Alhambra Avenue within three miles of the site. There are several parks within walking distance of the proposed Facility, including the Martinez Waterfront Park, which is currently being developed jointly by the City of Martinez and the East Bay Regional Parks District. Several churches are also within walking distance of the site.

Impacts and Mitigation Measures

No impacts are known or foreseen regarding medical services and community facilities. Accordingly, no mitigation measures are suggested.

UTILITY RELOCATIONS/ABANDONMENTS

Providing utility services to the proposed County Detention Facility in addition to construction of the Facility will require major relocations or abandonments of existing utilities. This matter is discussed separately in each specific utility section of the Utilities chapter; the purpose of this section is to combine and summarize all utility relocations and abandonments that will occur if the Detention Facility is approved and constructed. Figures 7 and 8 graphically portray existing and proposed future underground utilities in and around the Facility site.

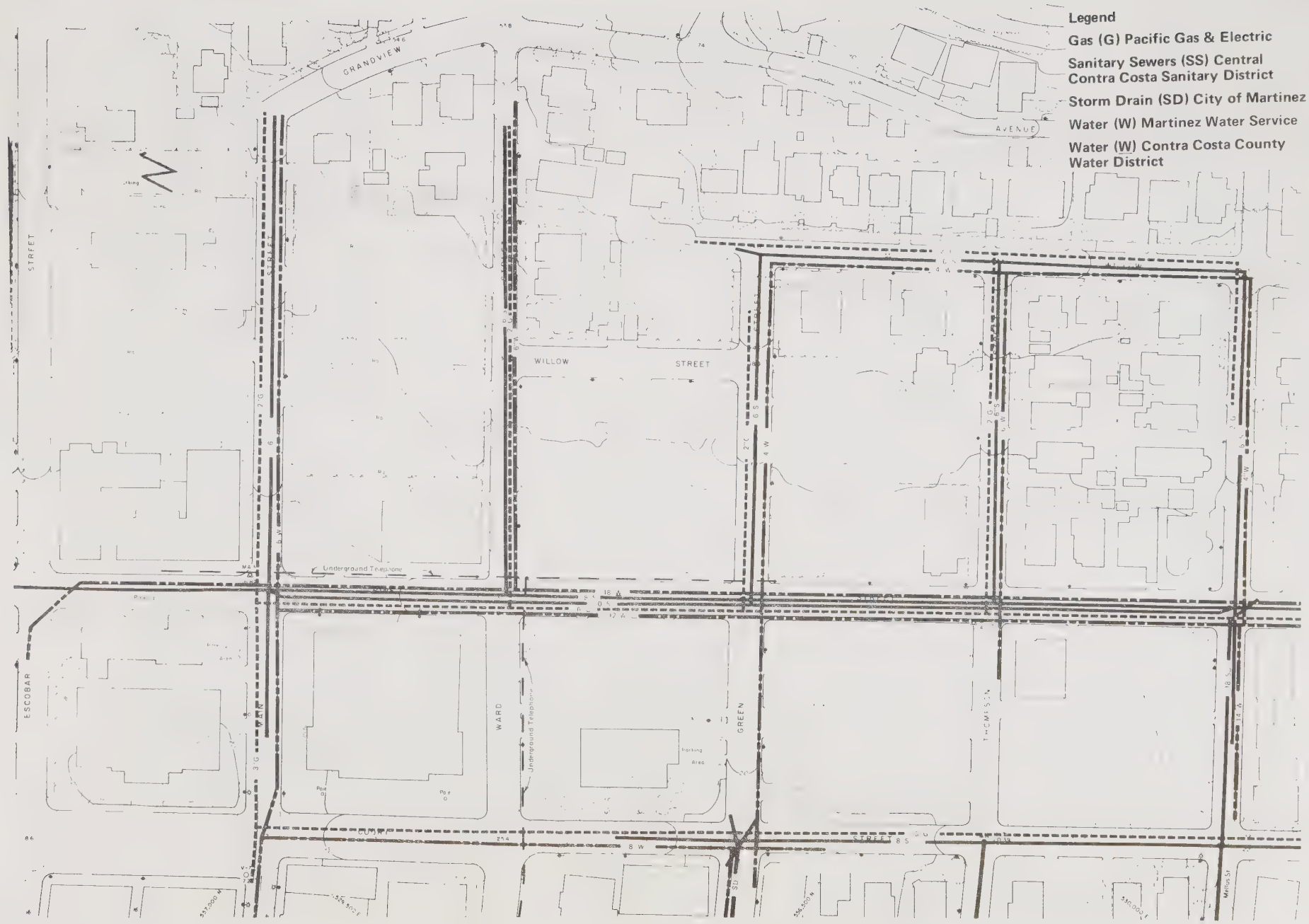
All existing utilities within the Facility site on Green and Thompson Streets will be either abandoned in place if located underground, or removed if located overhead. Underground utilities on both of these streets include natural gas lines, sanitary sewer lines, and water distribution lines. Overhead utilities include electrical lines, telephone lines, and cable television lines. In all cases except sewer lines, removal or abandonment of these utilities will have no effect on existing customers surrounding the site.

Currently, sewer lines on Willow Street drain into the Green or Thompson Street lines. To continue sewer service to residences on Willow Street, the County will contract the design and construction of a new line on most of Willow Street, which will drain into an existing line on Mellus Street. Sewage from the northerly portion of Willow Street will continue to drain northerly to an existing Ward Street line.

All existing utilities on Pine Street within the site will be abandoned in place or removed, and most services will be relocated. The existing overhead fire alarm line will be removed, and the service will be relocated to Willow Street. Water, sanitary sewer, and natural gas services will be relocated under the proposed Pine Street diversion, as discussed in the following paragraph. Telephone, electricity and cable television services, all located overhead on Pine Street, will be removed; service to existing users surrounding the site will not be affected. A portion of the telephone cable, currently unused, is located underground north of Green Street and may be removed prior to construction. This cable, or a replacement, will be used for Detention Facility telephone service.

New water, sanitary sewer, and natural gas lines will connect existing services at the intersection of Pine and Mellus Streets to existing services on Court Street. The new lines on Court Street will replace existing lines on Court Street for a distance of up to four blocks. The new sewer line will be larger and of an improved design. The 12"-diameter line will connect two existing lines (8", 10") under Mellus Street to the existing system at Court and Escobar Streets. A new 3"

Figure 7
Existing Underground Facilities



- Legend
- Gas (G) Pacific Gas & Electric
 - Sanitary Sewers (SS) Central Contra Costa Sanitary District
 - Storm Drain (SD) City of Martinez
 - Water (W) Martinez Water Service
 - Water (W) Contra Costa County Water District

Figure 8
Proposed Modifications to Underground Facilities



- Legend**
- Gas (G) Pacific Gas & Electric
 - Sanitary Sewers (SS) Central Contra Costa Sanitary District
 - Storm Drain (SD) City of Martinez
 - Water (W) Martinez Water Service
 - Water (W) Contra Costa County Water District

diameter gas line will connect the existing 6" line at Mellus Street to the existing 3" line at Court and Thompson Streets. A pending arrangement between the City of Martinez and the Contra Costa Water District would allow the construction of one 18" water main under the Pine Street Diversion and Court Street. Unless this arrangement is completed, two new lines, 18" and 12" in diameter will be constructed to continue the existing double system on Pine Street.

Impacts

1. Relocations or removals of existing utility services will create intermittent traffic problems and are likely to generate a significant amount of noise.
2. It has been estimated that off-site utility relocation will cost approximately \$200,000. Some of the work not included in this estimate will be funded by PG&E's "Rule 20" monies. Rule 20 monies will cover most costs incurred from undergrounding existing overhead utilities within the utility district to be formed. These include electricity, telephone, cable T.V. and radio, and the fire alarm system. The locations of these future underground lines are not yet known.
3. Utility relocations may cause brief interruptions of services to existing customers. This impact is unlikely, as precautions will be taken to avoid such interruptions.

Mitigation Measures

Possible impacts will be mitigated by maximizing coordination of all utility work to be done.

APPENDIX

Estimated Utility Service Costs

The following is a tabulation of estimated monthly and annual service costs for utilities serving the proposed County Detention Facility. It should be emphasized that all figures are based on estimated amounts of utility usage at current service charges. Some figures, particularly for natural gas and fuel oil usage, are less accurate estimates, as the usage cannot yet be accurately determined due to the immature state of building design, and service costs are expected to markedly increase in the next few years. Specific utility discussions should be consulted to determine the relative accuracy of each estimation.

Estimated Utility Service Costs

<u>Utility</u>	<u>Monthly</u>	<u>Annual</u>
Sewer	\$3220	\$38,640
Water	1340	16,080
(Bottled water) ¹	(2000)	(24,000)
Natural gas ²	1590	19,050
(Fuel oil) ¹	(4160)	(49,890)
Electricity	10,970	131,630
Telephone	2250	27,000
Television and radio	175	21,000
Fire protection ³	-	-
Solid waste disposal	<u>370</u>	<u>4,440</u>
TOTAL	\$19,915/month	\$238,940/year

¹The estimates for bottled water and fuel oil are not included in the totals.

²Natural gas estimates cover only the use of gas for heating. Other uses (laundry, kitchen) have not been estimated.

³No service charge for fire protection due to the fact that the County is not a taxpayer.

Chapter 15

ENERGY

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Interactive Resources, Inc.
Point Richmond, California
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
LIST OF APPENDICES	
INTRODUCTION	15-1
SCOPE OF SERVICE	15-2
METHODS	15-3
RESOLUTS OF THE ANALYSIS OF DATA	15-5
CONCLUSIONS	15-12
ALTERNATIVES	15-23
MITIGATION MEASURES	15-24
SUMMARY	15-46
GENERAL REFERENCES	15-48
GLOSSARY OF TERMS AND UNITS OF ENERGY	15-61

LIST OF APPENDICES

The appendices listed below are cited in this chapter, but they are not included in this Background Report. They are too voluminous and often too technical to be reproduced in this document. They are, however, on file and may be reviewed at the Contra Costa County Planning Department.

Appendix

- A. Request for Proposal and Agreement to Prepare Energy Element of the EIR.
 - The scope of services for this chapter, and the contractual agreement between Contra Costa County and Interactive Resources, Inc.
- B. Media Descriptions of Facilities Program Decisions.
 - Reproductions of newspaper clippings; October and November, 1976.
- C. Excerpts of the EIR Documents for the Rejected Criminal Justice Detention Facility Design.
 - Excerpts on energy subject matter from the 1975 Draft EIR and Response Document, and their appendices.
- D. California Public Utilities Commission Interim Order C-9581.
 - A reproduction of the CPUC interim order of December 2, 1975, establishing priorities for the statewide allocation of natural gas and stating, "3. California gas utilities shall not provide service to new customers, or additional service to current customers, when the customer's new requirement will be in excess of fifty thousand million cubic feet per day and that requirement can be met with alternate fuel."
- E. Notes from Meetings with Design Team.
 - Notes of meetings on 8/26/76, 8/31/76, and 12/9/76.
- F. Existing Jail and Proposed Site Energy Consumption Estimates.
 - Monthly energy consumption for electricity and gas for the County Main Jail, January, 1973 through June, 1976.
- G. Energy Use Projections for the Project.
 - Estimates, by month, of alternative energy source (oil, gas, electricity) consumption for an "Alternative E" project, by Donald Bentley and Associates. Included is a commentary of advantages and disadvantages of different energy sources, as well as the applicable resolutions regarding their use.

H. Federal Bureau of Prisons Energy Use Summary.

- A table relating 1975 energy consumption (by quarter year), on a per-inmate basis, to both prison operations and equipment operations.

I. PG&E Questionnaire on Electrical Service, Responses by PG&E to questions by Interactive Resources, Inc., regarding the status of the project under the utility's priority system, the sources and costs of the energy that the utility would be supplying to the project, and other matters.

J. Solar Energy Proposals at Detention Facilities.

- The Federal Bureau of Prisons grant application to the United States Energy Research and Development Administration for a test solar energy installation at the Federal Youth Center at Bastrop, Texas.

K. List of Individual Sources Consulted.

- Reproduced herein.

L. Interactive Resources, Inc., Staff Qualifications.

- Self-explanatory.

1. INTRODUCTION

A. Purpose of the Study

(1) Legal

The Energy Chapter of the Environmental Impact Report for the Proposed Contra Costa County Detention Facility is intended to satisfy the requirements of the California Environmental Quality Act of 1970, with revisions; Division 6, Title 14, of the California Administrative Code, Sections 15000 to 15166 and appendices; and Energy Conservation, Guidelines for Evaluating New Development in Contra Costa County.¹

(2) Importance of Energy Conservation

The process of extracting and converting energy resources not only affects the natural environment but, as we have seen recently, the associated and generally increasing costs can have profound economic and social affects as well. Concurrently, there has been an increasing recognition that the general patterns of urban development, as well as the specific characteristics of buildings, can have an important effect on the way that energy is used.

In recognition of this need to plan for energy-conserving development, the State of California has required that new projects in the state be evaluated to determine their effect on energy consumption, with an identification of ways to reduce wasteful use of scarce fossil fuels.

B. Relation to Other Components

This chapter is a special subject report to be compiled with reports on other subject categories to be used as an information source for, and appendix to, the general EIR prepared by the County staff. It is intended to be limited in scope to the subject of energy and therefore, may contain conclusions that would be evaluated differently with other kinds of information.

C. Relationship to the Project Design Process

This report was prepared while the design of the proposed Detention facility was in a formative stage. It was thought that this early timing would provide the opportunity for information on energy to be considered during the design process, but it was also recognized that this approach placed emphasis on evaluating the project's energy potentials while limiting its evaluation of the design itself. It is expected that the general EIR will address the project's utilization of this energy evaluation.

¹Interactive Resources, Inc. Energy Conservation, Guidelines for Evaluating New Development in Contra Costa County, California. Martinez: Contra Costa County Planning Department. May 1976

D. Procedure and Participants

Interactive Resources, Inc., is a comprehensive services environmental design firm specializing in energy-efficient building design and alternative energy applications for buildings. This entire report was prepared with in-house staff based on data supplied by a variety of sources listed in Appendix K.

2. SCOPE OF SERVICE

A. Content and Organization

The Agreement for Consultant Services authorized by the Contra Costa County Board of Supervisors, 17 August 1976, defines the Scope of Service for this report. A copy of this Agreement is included in Appendix A.

B. Limitations

This report is, by necessity, based on preliminary and sketchy project information. Details on the actual design of the proposed project are generally limited to the following:

(1) Project Description

The Project Description contained in the Request for Proposal for EIR consultants prepared by the Contra Costa Planning Department, dated 8 July 1976. (Appendix A.)

(2) Newspaper Accounts

Newspaper accounts of project-related activities undertaken by the Contra Costa County Board of Supervisors and the DFAC.

(3) Site Location Plan

The site location plan provided by the Contra Costa County Planning Department on November 1, 1976. (Appendix F.)

(4) Interviews and Meetings

Interviews and meetings held with Kaplan-McLaughlin, Architects, on 26 August 1976, and with Donald Bentley and Associates, Consulting Engineers, on 31 August 1976. (Appendix E.)

(5) Preliminary Energy Report

Preliminary Environmental and Energy Considerations, Contra Costa County Detention Center, a report by Donald Bentley and Associates, dated 21 October 1976 and addended 15 November 1976. (Appendix G.)

(6) Meetings

Meetings at Contra Costa County Administrative Complex with EIR staff, consultants, architect and mechanical engineer on 19 November 1976 and 9 December 1976.

Final schematic plans are not available at this time. The lack of more precise information limits the precision and accuracy of this report as it relates to the final product. However, its timely preparation will provide information highly useful in the planning and decision-making process that is still underway.

3. METHODS

Energy conservation is still a new enough social and economic concern that relatively few guidelines and data sources are available for use in evaluating the quantitative impact of energy-related environmental changes, particularly where specific building uses other than offices and residences are involved. The sources of information and the methods of analysis used in this report are less than ideal, but they represent a comprehensive effort to utilize what information is available and to assimilate it in a useful format. The research and analysis effort included the following steps:

A. Review of Previous EIR

The EIR and the Response Documents for the previous Criminal Justice Detention Center Design were reviewed and areas of conflict and community concern were noted. (See Appendix C.)

B. Existing Energy Use

The existing energy use of the proposed project site was estimated using data compiled in the Contra Costa County Energy Resources and Conservation Study, and the energy use of the existing jail was estimated using Pacific Gas and Electric records.

C. Projected Energy Use

Using existing published data and new data pertinent to existing similar facilities, a review was made of the expected magnitude of energy utilization for the proposed project by energy type, demand, and peak loading factors. Several authorities agree that there are only half a dozen detention facilities existing within the United States that are similar in design to the proposed Contra Costa County facility. An effort to obtain utility records for these similar facilities was only partially successful. Two of the six facilities were so new that no utility history had been established, and a third is part of a larger complex which has no sub-metering.

In addition, the United States Department of Justice, Bureau of Prisons, maintains detailed records of energy use within its system for both building operations and fuel for vehicles and equipment. The records for 1975 were obtained along with the average number of inmates so that a system-wide average energy use per inmate could be calculated (Appendix H.). This data provides an additional comparison for building energy consumption as well as an indication of the expected requirement for operation of vehicles.

D. Meetings with the Design Team

Meetings were held with Kaplan-McLaughlin, Architects, and Donald Bentley and Associates, Consulting Engineers, in which a list of questions pertinent to energy-related design characteristics of the project were discussed. Not all questions could be answered initially, but the design consultants continued to provide information as it became available. (See Appendix E.)

E. Projected Energy Sources

Pacific Gas and Electric Company was queried regarding the availability, cost and impact of supplying sufficient electrical power for the project (see Appendix I), and CPUC Order C-9581 restricting new gas service connections was reviewed for applicability to the proposed project. (See Appendix D.)

Local petroleum products suppliers were queried regarding the availability, cost and impact of supplying fuel oil for water and space heating of the proposed project.

F. Alternative Energy Sources

A review was made of the potential sources of non-depletable energy supplies applicable to the proposed project including acquisition of data related to solar energy utilization at other detention facilities in the United States. (Appendix J.)

G. Energy Conservation Measures

Information on effective energy conservation programs at other detention facilities was assembled and reviewed. In addition, a general search of the literature on energy conservation in buildings was conducted in order to isolate those references which would have the highest applicability to the proposed project.

4. RESULTS OF THE ANALYSIS OF DATA

A. Definitions

(1) Measurement of Energy

For consistency with the State of California's format for energy analysis (as outlined in the reviewed environmental impact report guidelines), the British Thermal Unit (BTU) has been used as the basic energy unit in this study. Since measurements of large-scale energy use often range into billions of BTU's or more, energy use tables in this study often are expressed in therms; one therm equals 100,000 BTU's. While the therm is commonly associated only with natural gas consumption, this unit of energy is used in this study for general measurement of energy use.

(2) Categories of Energy Inputs

Energy inputs related to the construction of a project are generally of two basic types:

Direct energy inputs refer to energy actually expended at or near the time or point of use, such as the quantity of fuel used in operating construction equipment, cooking, or heating water.

Indirect or hidden energy inputs include the energy which is "built into" the product before the point of use, such as the fuel consumed in pumping gas or manufacturing concrete.

Total energy input is the sum of direct and indirect energy input. For this building project, the total energy input will be evaluated chronologically to include two phases related to the time of occurrence.

Initial energy input includes the input for all "front-end" improvements, such as production and transportation of materials and fuel for construction equipment. Long-term energy input refers to continuing energy requirements spaced out over a period of time, such as on-going fuel use for space heating or transportation related to facility operation.

B. Calculation of Initial Energy Inputs

An estimate of the energy required to construct the project may be calculated using the methods outlined in the Contra Costa County Guidelines.² The following assumptions have been made:

²Ibid pp. 4-a

(1) The construction cost including demolition and clearing of the site is approximately \$20 million.

(2) The midpoint of construction will be the second quarter of 1978.

Using Table 1.1 in the Guidelines, under the heading "New Construction Non-residential," the third quarter 1975 energy input for project construction would be: $\$20,000,000 \times 24,000 \text{ BTU/Dollar} = 4.80 \times 10^{11} \text{ BTU}$ or 4.80×10^6 therms.

With construction costs inflating at approximately 0.75 per cent per month,³ the energy input per dollar would be reduced at an equivalent rate. For the second quarter of 1978, the energy input would be reduced by a factor of 18 per cent, as follows: $\frac{4.80 \times 10^{11} \text{ BTU}}{1.18} = 4.07 \times 10^{11} \text{ BTU}$ or 4.7×10^6 therms.

C. Calculation of Long-term Energy Commitments

The long-term energy commitments include principally the fuel and electricity consumed in building operation and maintenance and the fuel consumed in transportation related to the operation of the facility. The impacts are related to the net difference between existing energy consumption and future energy consumption resulting from operation of the project as well as any changes in the types of fuel utilized.

(1) Building Operation

(a) Existing Consumption at the Proposed Site. The proposed site consists of portions of six city blocks in Martinez bounded by Ward Street, Willow Street, Court Street and Mellus Street. The existing uses to be discontinued include several parking lots, 13 residential units, 15,148 square feet of office space, and 13 street lights. The energy audit is summarized in Figure 4.1. The peak existing electrical demand is estimated at 68 KVA⁴. (Kilovolt Ampere)

³ Dodge Building Cost Service reports approximately 0.75 per cent per month increase from third quarter 1975 to third quarter 1976.

⁴ Estimated at 4 KVA per structure. There are 13 existing residences plus four residences that have been converted to offices.

Figure 4.1

Estimated Existing Yearly Energy Consumption
Proposed Site for Contra Costa County
Criminal Justice Facility

Use	Electricity/Year KWH (Therms)		Gas/Year Therms	Total/Year Therms
Offices ⁵	246,155	(8,399)	8,364	16,763
Residences ⁶	95,584	(3,262)	17,936	21,198
Street lights ⁷	35,815	(1,222)	-	1,222
	377,554	(12,883)	26,300	39,183

(b) Energy Consumption of the Existing Main Jail. The existing jail consists of 14,476 square feet of floor space of which approximately 90 per cent is living space. The average inmate population is 155 with a maximum of 162. Space and water heating is by steam which originates in a gas-fired boiler located in the Court House across Ward Street to the south. Utility records covering the past four years were obtained from P G and E and were averaged to obtain estimates of yearly consumption. Since gas usage is not submetered for the jail, the overall consumption of the three adjacent buildings was pro-rated by floor area with the jail allocated 13.8 per cent of the total usage. The totals are summarized in Figure 4.2. The peak electrical demand of the existing jail was 47 KVA recorded in October 1976.⁸

⁵Interactive Resources, Inc. Energy Conservation, Analysis and Recommendations for Public Buildings in Contra Costa County, pp. 2-3. Estimated using a weighted average of the energy use per unit area of all of the office buildings studied.

⁶Interactive Resources, Inc. Energy Conservation, Guidelines for Evaluating New Development in Contra Costa County, California, P. 206.

⁷Contra Costa County Planning Department, Energy Conservation, Energy Use and Conservation in Contra Costa County, p. 106.

⁸Sturgeon, J.J. Richmond Office, Pacific Gas and Electric Co., 7 December 1976.

Figure 4.2

Estimated Yearly Energy Consumption
Existing Main Jail

Use	Electricity/Year KWH (Therms)	Gas/Year Therms	Total/Year Therms
Building Operations ⁹	308,772 (10,535)	6,189	16,724

(c) Projected Consumption at the Proposed Building. A discussion of potential energy sources and projected energy consumption by month has been provided by Donald Bentley and Associates, Consulting Engineers. The discussion concludes that the principal energy sources will be fuel oil for water and space heating, an unspecified amount of gas for cooking, and electricity for the remainder of the energy requirements. The totals are summarized in Figure 4.3. The electrical connected load is estimated at 19000 KVA with maximum demand between 1000 and 12000 KVA.

Figure 4.3

Estimated Yearly Energy Consumption
Proposed Contra Costa County
Criminal Justice Facility

Use	Electricity/Year KWH (Therms)	Gas/Year Therms	Oil/Year Gallons (Therms)	Total/Year Therms
Building Operations ¹⁰	6,581,425 (224,558)	Unknown	131,335 (183,869)	355,893

(2) Transportation

(a) County-owned Vehicles. Figure 4.4 compares the estimated energy consumption resulting from County-owned vehicle operations related to both the existing and proposed detention facilities.¹¹

⁹See Appendix F for raw data.

¹⁰See Appendix G.

¹¹Derived from Federal Bureau of Prisons nationwide per-inmate averages for prison-related vehicle and equipment operations. (See Appendix H.) While the data are marginally applicable, they appear to be the best available source, but are not critical to the evolution of the project.

Figure 4.4

Estimated Transportation Fuel
For County-owned Vehicles

Use	Total Therms
Proposed Detention Facility	16,852
Existing Main Jail	<u>6,820</u>
Net Difference	10,032

(b) Other Vehicles. For the proposed project there will also be increases in transportation fuel use related to individuals who are employed in the new building or are visiting or providing services. Figure 4.5 is an estimate of such energy uses for the existing site, but sufficient data is not now available to make projections for the new project or to derive a net difference.

Figure 4.5

Estimated Existing Transportation Energy Summary
Proposed Site for Contra Costa County
Criminal Justice Facility

Use	Quantity	Total MILES in POV(Personal Own Vehicle)	Total Fuel/Year (Therms) ¹²
Professional Offices ¹³	15,148 sq.ft.	177,232	14,910
Residences ¹⁴	13 each	128,115	<u>10,778</u>
			25,688

¹²One gallon of Gasoline = 126,190 BTU.

¹³Assume 450 trips per week per 10,000 square feet of floor area (Source: CALTRANS, 10th Progress Report Trip End Generation, July 1975) at five miles per gallon of gasoline.

¹⁴Assume three trips per day per dwelling unit at nine miles per trip and 15 miles per gallon of gasoline.

(3) Water Supply

Both the existing and proposed facilities are served by the Martinez water system which in turn purchases water from the Contra Costa County Water District. With electricity used for pumping and treatment of 2,250 KWH (Kilo watt hours) per million gallons,¹⁵ and an estimate that the project will consume at least 10 million gallons¹⁶ of water annually, the resultant yearly electrical requirement for water supply would be approximately 22,500 KWH.

(4) Sewage Treatment

Sewage treatment for the proposed facility is provided by the Contra Costa County Sanitary District treatment plant at the end of Imhoff Drive in Martinez.

The national average energy use for primary and secondary sewage treatment is 880 KWH per million gallons of wastewater treated.

The Central Contra Costa County Sanitary District has been recovering methane gas for 20 years in a sufficient quantity to provide a heat source for the plant. The existing plant will be replaced by a facility for secondary treatment by 1980. Secondary treatment will require at least twice as much energy per volume of material processed. Until 1980 or 1982 the new plant will use natural gas or diesel fuel. The second phase construction plant will include solid waste and sewage sludge heat recovery for steam generators. The value of the electricity thus generated is estimated to be two to three million dollars annually, and may be in excess of that needed to run the plant.¹⁷

(5) Solid Waste

Solid waste which is now being disposed of by the Martinez Sanitary Service in the ACME Landfill will likely increase as a result of the proposed facility.

Energy is used in solid waste disposal, primarily for transportation and on-site vehicles. Nationwide, solid waste collection uses about 3.6 per cent of all highway use of diesel fuel and approximately 1.6 per cent of all truck gasoline used. Figures for Contra Costa County are not available and therefore no estimate has been made for the proposed project.

¹⁵Contra Costa County Planning Department, Energy Use and Conservation in Contra Costa County, p. 102.

¹⁶Milne, Murray. Residential Water Conservation. (Davis: University of California, California Water Resources Center, Report No. 35). March 1976, p. 19. The average amount of water used daily indoors (70 gallons) times the number of inmates (383) = 26,810 gallons per day or 9,785,650 gallons per year.

¹⁷Contra Costa County Planning Department, Energy Use and Conservation in Contra Costa County, p. 104

Figure 4.6

Summary of Energy Impacts

	Electricity KWH	Fuel Therms	Primary Energy Total (Therms)
<u>Initial Energy Inputs</u>			
Construction Energy Inputs			+4.07x10 ⁶
<u>Long-term Commitments</u>			
<u>Building Operation</u>			
New Project	+6,581,425	+183,869 ¹⁸	
Less Existing Site	- 246,155	- 26,300 ¹⁹	
Less Existing Main Jail	- 308,772	- 6,189 ¹⁹	
Net Difference	+6,026,498	+151,380	No estimate
<u>Operations Transportation</u>			
New Project		+ 16,852	
Less Existing Jail		- 6,820	
Net Difference		+ 10,032	No estimate
<u>Public and POV Transportation</u>			
New Project		Data not available	
Less Existing Site		25,688	
Less Existing Jail		Data not available	
Net Difference		No estimate	No estimate
<u>Water Supply</u>			
New Project	+ 22,500		
Less Existing Site	Data not available		
Less Existing Jail	- 9,000		
Net Difference	No estimate		No estimate
<u>Sewage Treatment</u>			
New Project	No estimate	No estimate	
Less Existing Site	No estimate	No estimate	
Less Existing Jail	No estimate	No estimate	
Net Difference			No estimate
<u>Solid Waste</u>			
New Project	No estimate	No estimate	
Less Existing Site	No estimate	No estimate	
Less Existing Jail	No estimate	No estimate	
Net Difference			No estimate
<u>Peak Electrical Demand</u>			
New Project	+ 1,200 KVA		
Less Existing Site	- 68 KVA		
Less Existing Jail	- 47 KVA		
Net Difference	+ 1,085 KVA		

¹⁸ Estimate for fuel oil only. Natural gas will be used for cooking and operating dryers in the laundry, but no estimate is available at this time.

¹⁹ Only natural gas is used in existing buildings.

5. CONCLUSIONS

A. Energy-related Impacts of Project Construction

The initial construction of the project will result in an estimated non-specific energy expenditure of 4.07×10^6 therms, 99.6 per cent of which could be assumed as non-renewable fuel resources if this consumption is proportional to the National average.²⁰

B. Long-term Commitment for Electrical Energy

The long-term electrical energy requirement is composed of two significant factors: total operational requirement per time unit in kilowatt hours and peak load in kilowatts or KVA.

(1) Peak Load Increases and Plant Expansion

The net additional peak load imposed by the proposed project on the P G and E electrical supply system is estimated to be 1,085 KVA. (See Figure 4.6)

(a) Plant Expansion as a Function of Increased System Demands.

P G and E's power supply is being continuously expanded to provide for additional loads such as the proposed criminal justice facility. The following is a listing of P G and E's new generation units under construction, or for which applications have been filed seeking authority for their construction:²⁰

²⁰Joint Committee on Atomic Energy. Understanding the "National Energy Dilemma." (Washington, DC: U. S. Government Printing Office, 1973.) Charts A, C and E.

²¹See Appendix I.

Figure 5.1

P G and E Generation Plant Expansion Program

Power Plant	Location	No.	Status ²²	Type ²³	Net Capacity MW	Planned Operating Date
Diablo Canyon	San Luis Obispo Co.	1	C	N	1,060	1977
Diablo Canyon	San Luis Obispo Co.	2	C	N	1,060	1977
Oakland	Oakland	1	P	CT	57	1977
Oakland	Oakland	2	P	CT	57	1977
Oakland	Oakland	3	P	CT	57	1977
The Geysers	Sonoma Co.	12	C	G	106	1978
The Geysers	Sonoma Co.	14	P	G	110	1978
The Geysers	Sonoma Co.	15	P	G	55	1978
The Geysers	Lake Co.	13	P	G	135	1979
Helms (Pumped Storage)	Kings River	--	C	H	1,125	1981

P G and E has a wide mix of electric generation resources which include hydroelectric, nuclear, geothermal and fossil fuel-fired generating plants. The average construction cost range of the expansions listed in Figure 5.1 varies from \$140.00 to \$500.00 per kilowatt. To cover the additional peak load requirement of the proposed project would cost from \$151,900 to \$544,500 and result in an estimated initial non-specific energy consumption of from 54,684 to 196,020 therms assuming the costs are in 1975 dollars.

(b) The Potential for Electrical Service Interruptions. Currently, P G and E can normally supply the estimated average and peak demand loads for the proposed project.²⁴ However, a combination of short duration factors including, for example, hydroelectric water shortages, prolonged summer hot spells with concomitant heavy air conditioner use, and extensive agricultural water pumping, may cause loads that exceed P G and E system capacity.

P G and E does not hold itself liable for interruptions to service or insufficiency of supply that are due to causes beyond its control.

²²C - Under Construction

P - Planned, Governmental Approvals Pending

²³G - Geothermal

GT - Oil-fueled Combustion Turbine

N - Nuclear

H - Hydroelectric

²⁴See Appendix 1, Question 1.

Prison facilities are included as priority one "Essential and Protected Customer Uses," under CPUC Decision No. 86081 in Case No. 9884 establishing curtailment policies for electrical service. However, no specific provisions exist for implementation of the priority plan. In its decision the Commission stated, "The priority plan adopted herein should only be implemented as an emergency measure should voluntary conservation not achieve the necessary savings of energy." Electric Rule No. 14, "Shortages of Supply and Interruption of Delivery," outlines the company's position on this subject.²⁵ Actually, P G and E anticipates multiple courses of action during a forecasted electric supply shortage. In sequence, supply shortages would normally entail the following actions:

First Phase: P G and E will curtail customers who have service contracts calling for load reductions in emergencies.

Second Phase: P G and E will request voluntary load reductions by all customers.

Third Phase: The California Public Utilities Commission is to order mandatory load reductions by customers in accord with the electric priorities of service criteria.

Fourth Phase: If all the above phases should fail to resolve the supply shortage problem, P G and E will have no choice but to implement sequential circuit interruptions (temporary service interruptions to customers). P G and E has no facilities to protect priorities of use or customers during this type of catastrophic procedure.

(2) The Impact of Meeting Increased Non-peak Electrical Demand

(a) The Availability of Electrical Power. The proposed project will require an estimated net additional electrical energy supply of 6,026,498 kilowatt hours per year indefinitely. P G and E does not foresee a general shortage of electricity in the next few years, provided steps are not taken or unforeseen incidents do not occur, beyond the control of the company which could prevent it from meeting the requirements of its customers. Such steps might, for example, include a prolonged oil embargo, federal or state regulatory actions affecting energy supply, inordinate delays in the P G and E construction program and an inability to obtain adequate and timely rate relief which would hamper the utilities' ability to obtain necessary financing.

²⁵ See Appendix I, Rule and Regulation Number 14.

(b) Efficiency Factors for Electrical Energy Supply. P G and E estimates a system-wide efficiency of 30.86 per cent in converting primary energy into electrical energy delivered at the point of use.²⁶ Thus, the actual additional energy input would increase by a factor of approximately 3.24 from 205,624 therms (6,026,498 KWH x .03412 therms/KWH) consumed at the site, to 666,222 therms per year of primary energy.

(c) The Environmental Impacts of Electrical Generation. Typically, electrical energy has a relatively minor environmental impact at the point of use. However, the environmental effects of its initial generation, usually at a remote location, are well documented.²⁷

In spite of many differences, fossil fueled and nuclear fueled electric power plants have at least four basic aspects in common; both classes of fuel are at present used almost entirely in steam electric-generation plants, and for this reason both create somewhat similar problems of thermal pollution. The fossil plants discharge some of their waste heat into the air, while all the waste heat from nuclear plants goes into the water. In addition, both pollute water with chemical additives, and at times great amounts of land are used in transmitting power from the plant to the consumer.

(i) Thermal and Chemical Water Pollution from Steam Generating Plants. Although thermal waste is common to both nuclear and fossil fueled plants, nuclear plans produce substantially more waste heat per unit of electricity generated. Because of its more efficient thermodynamic cycle, a fossil fueled plant will discharge about 40 per cent less heat than will a nuclear plant of equal size.

It is fairly easy to get a feeling for these numbers. A 1,000 MW(e) fossil plant will discharge about 1.7 million BTU per second as waste heat. A nuclear plant of the same capacity will discharge about 2.5 million BTU per second.

When waste heat is dumped in a body of water, some forms of aquatic life die from the increased temperature. Others may become more susceptible to chemical or physical toxins or to organisms causing disease. There is a decrease in spawning success and in the survival of young fish. Normal biological rhythms and migration patterns are disrupted. Prey-predator relationships are disrupted. Oxygen concentrations are decreased at the very time when more oxygen is needed by the aquatic life because of the increase in temperature. There is an increase in rooted plant growth, leading to decreased river flow rate and increased siltation.

²⁶See Appendix I, Question 5.

²⁷Abrahamson, Dean E. Environmental Cost of Electric Power. (New York: Scientific Institute for Public Information, 1970).

Not only is the temperature of the water increased, but there are apt to be sudden changes in temperature, for example, due to day-night load variations, or when a nuclear plant is shut down for its annual refueling. It is therefore difficult for a new web of species adapted to the warmed temperature to become established. Fish are probably even more susceptible to a rapid decrease in temperature than to a rapid increase.

Thermal pollution also affects human activities: changes are required in water purification and in temperature-dependent industrial processes; swimming and other recreational uses are hampered or halted by the increased growth of algae and decomposition of sludge.

Chemicals, such as chlorine, are added to the water used in steam electric plants to protect the machinery. Biocides are added to prevent buildup of slime in the condenser; various other compounds are added to control the acidity of the cooling or process water; and other similar factors encourage the use of chemicals. At present, all of these additives are not being recovered but are being released into the nearest body of water. Some of these chemicals are dangerous when discharged into the environment and can cause serious disruption as well as rendering certain commercially important shellfish unfit for human consumption. All these chemicals could be contained or eliminated.

P G and E's position with respect to water pollution is summarized as follows:²⁸

The Environmental Protection Agency (EPA) has issued regulations establishing limitations upon thermal and chemical discharges by thermal-electric generating stations. The company must bring its generating units into compliance with the chemical discharge regulations by 1 July 1977. The company's existing units are in substantial compliance with or are exempt from the thermal discharge regulations. However, these units are still subject to applicable state water quality standards with respect to thermal effluents. A majority of the company's existing units presently comply with these state standards. The company has applied for exemption from these state standards for existing units at three of its plants which are not in compliance. These units represent approximately 30 per cent of the company's total normal operating capability. The company also has applied for exemption from provisions of the EPA regulations which would require the installation of closed-cycle cooling systems at company units currently under construction at coastal sites. If all of these applications for exemption are granted, construction expenditures of approximately \$25 million (included in the amounts in the preceding paragraph) would be required

²⁸See Appendix I, Prospectus for 7,500,000 Shares P G and E Common Stock, p.22.

during the period 1976-1983 to meet state and federal effluent standards. If these applications are denied, construction expenditures of up to \$350 million would be required during that period.

(ii) Air Quality Degradation from Fossil Fuel Plants. Of all environmental intrusions produced by manufacturing processes, air pollution is probably the most easily noticed and most talked about today. Burning fossil fuels creates the largest share of many of the common air pollutants and much of this fuel is burned to produce electric power.

At present, the noxious, poisonous or unsightly air pollutants are receiving much attention. One of these is sulfur dioxide (SO_2), which has been associated with respiratory disease. Evaporated water and carbon dioxide will add substantial amounts to the water vapor normally present in the atmosphere. Both these usually harmless substances could trigger serious changes in the world's climate within our lifetimes.

In addition to the wastes released or available for release at the plant itself, there are various pollutants produced at earlier stages before the fuel reaches the plant.

P G and E's position in relation to air quality is as follows:

The company operates thermal- electric generating plants in several regional Air Pollution Control Districts which directly (or indirectly through emission limitations) require that fuel oil used for generating purposes contain no more than 0.5 per cent sulfur by weight. Fuel oil now under contract is capable of meeting this standard. In addition, the company's plants operate in six air basins designed by the State Air Resources Board. The present state ambient quality standards for some emissions are more restrictive than federal standards.

The Bay Area Air Pollution Control District has initiated three proceedings to collect civil penalties for alleged violations of the opacity standards. The maximum penalty that may be assessed for each of these violations is \$500.00.

(iii) Unique Impacts of Nuclear Fuel Plants. Nuclear fueled power plants have one distinct advantage: they produce none of the noxious and sometimes poisonous air pollutants for which fossil fuels are well known. However, nuclear plants produce radioactive wastes. Fossil fueled plants do discharge some radioactive wastes in their effluents, because all fossil fuels contain some radioactive materials and these radioisotopes are released when the fuel is burned. Compared to a boiling-water nuclear reactor, however, the quantity of radioisotopes released by a coal fired plant is of minor importance.

Radioactive wastes are discharged from nuclear reactors both during normal operation and during accidents. A major accident would be a catastrophe of a magnitude never before experienced by any industry. Such an event is not expected to occur often, if at all. Yet, even though nuclear plants are designed to minimize the chances of an accident, there is still the possibility that one could occur. The releases which have been occurring during normal operation of reactors do not cause much risk of damage to each individual who is exposed; however, a great many people are exposed for a long time. Probably the net effect from normal operation exceeds that of a single large accident.

In addition to the wastes released or available for release at the plant location, there are various wastes produced at other stages of the fuel cycle, both before the fuel reaches the nuclear plant and after it has been removed. Uranium mining entails risks both to the miners and to the area where the mine is located, as large mounds of uranium tailing are sometimes left out in the open, to be blown and distributed by the wind and by nearby streams and rivers. The processing of the raw ore and the fabrication of the uranium fuel are other parts of the cycle where radiation exposure can occur. After the fuel has been used in a nuclear plant, there are still dangers associated with transporting the highly radioactive spent fuel, as well as the reprocessing of the used fuel elements.

(iv) Environmental Effects of Hydroelectric Generation. Using falling water rather than steam or gas to drive the turbines of a power plant avoids the pollution problems of both nuclear and combustible fuels; water is clean and does not give off poisons, ash, or radioactivity in the process of generating electricity. Where large amounts of water will be impounded and used to generate power, extraordinary problems can arise. Large dam-building projects may affect large, even vast areas, and their effects are of many types, often difficult to predict.

The water used in one region for power generation may mean a lack of water for another region that had access to the water before it was impounded. Earth tremors often occur when large dams are built, as the new lakes are so heavy that layers of rock beneath them shift to accommodate to the stress. Siltation is yet another difficulty. Soil and debris can fill up a lake in time, causing a reduction in the power potential of the plant. And the controversy involving Stanislaus and other scenic rivers makes it clear that sometimes the impounding of water for power destroys areas of great recreational demand.

(v) Environmental Effects of Geothermal Power Generation. Even geothermal power from "The Geysers" is not immune from environmental side effects.²⁹

Climatological. An apparent increase in humidity has caused increased disease incidence on native vegetation in some sectors of the field. The evidence obtained by the Crocker Nuclear Laboratory, U.C., Davis, and the State Air Resources Board correlate sulfur compounds in aerosols with the formation of haze which affects visibility, light quality, and air purity associated with summer inversion layers. The discharge of hydrogen sulfide in emissions at The Geysers contributes an incremental increase in the presently undetermined magnitude of sulfur level in the Sacramento Valley. Continued field development could also affect the Clear Lake Basin.

Air Quality. The hydrogen sulfide component of noncondensable gases will continue to be released at its present rate for an indefinite period because the proposed ferrous iron scrubbing system tested by Pacific Gas and Electric Company over the last four years has not proven satisfactory.

Geological. The acceleration of and triggering of landslides in an area fraught with large-scale natural mass wastage is a principal environmental hazard that leads to serious potential impacts, including: (1) water quality (sedimentation and nutrient increase); (2) fishery disruption; (3) air quality (blowouts from ruptured and sheared casing); (4) aesthetic degradation; (5) vegetation loss; and (6) wildlife habitat modifications.

Loss of top soil including soil fauna, nutrients, and seed load; disruption of soil profile; soil transport; erosion; and chemical alteration are all impacts that can be expected to greater or lesser extent from geothermal development.

Adverse impacts affecting water quality are increased turbidity, sediment load, increase nutrient load, and possible injection of biosensitive materials through accidental discharge of condensate or materials used in drilling or steam generation. Considering the nature of geothermal drilling of replacement wells over the life of the field, substantial sediment loads can be expected. The levels of other impact factors affecting water quality may be proportionately greater because of the increased probability of occurrence.

²⁹ECOVUEW, EIR for the Geothermal Leasehold of Union Oil Company at The Geysers. (Santa Rosa: Sonoma County Planning Dept.) February 1975, pp. 73-77

(3) The Impact of Long-term Fossil Fuel Commitment for Water and Space Heating

Estimates indicate a net increase of 183,869 therms (131,335 gallons) of fuel oil and a net decrease of 32,489 therms of natural gas to be consumed indefinitely on an annual basis as a result of the project.

Compared to fuel oil, emissions from the combustion of natural gas have a relatively insignificant adverse impact on air quality as indicated by the exemptions of certain amounts of residential and commercial natural gas heating from permit requirements of the Bay Area Air Pollution Control District.³⁰

No amount of emissions from oil-fired heating are exempt after 19 December 1976, and the addition of these emissions is likely to have a noticeable and adverse impact on air quality in the area of the project. Details of these impacts are properly dealt with in detail in the Air Quality Chapter (#13).

In addition, the proposed fuel oil utilization in place of the existing natural gas use carries a greater possibility of damage to water quality, wildlife, vegetation, and air quality in event of spillage due to transportation accidents.

The proposed use of fuel oil will, however, free approximately 32,489 therms per year of natural gas for other uses at a time when shortages are becoming critical. The Federal Energy Administration predicts, for example, a six per cent shortage of natural gas for commercial use this winter (1976-77), and P G and E has stated that it may have to curtail natural gas supplies to some residential customers by 1986 if it does not get new supply sources.³¹

(4) The Impact of Long-term Commitments for Transportation Fuels

Some of the major environmental effects of increased transportation fuel use related to the proposed project will be properly dealt with in the Traffic and Air Quality elements of the general EIR. Vehicle fuels such as gasoline and diesel oil are non-renewable fossil fuel resources and result in many of the impacts of fossil fuel combustion including supply and economics which are detailed in the following two pages.

(5) The Impact of Long-term Commitments for Water Supply, Sewage Treatment and Solid Waste Disposal

The Milne Report³² states that the fastest growing cost item in the nation's water budget is the energy needed to pump water from one place to another. In fact, some experts believe that within ten years energy shortages will force the institution of strict water conservation programs in many parts of the nation. Less water consumed means less sewage produced and more energy saved in the treatment process.

³⁰Bay Area Air Pollution Control District, Regulation 2 (15th Revision: San Francisco, 1976). Section 1516 (A2).

³¹See Appedix I.

³²Milne, Murray, Residential Water Conservation, p. 11.

Today, trash and garbage are resources.³³ These wastes are estimated to have a high heating value of 4,350 BTU per pound (8,700,000 BTU per ton, as compared to 8,500,000 BTU per barrel of crude oil) with an average 25 percent moisture content. Approximately 1,136 tons of solid waste are deposited daily at the ACME landfill site. The garbage and commercial-industrial wastes deposited daily at ACME have an estimated energy content of 7,099,200,000 BTU's. Actual net energy recovery is not known. It is planned to burn 63 percent of this material to generate electricity for the Central Sanitary District wastewater treatment plant, a process expected to be operational by 1980. A pilot plant operation to determine the feasibility of energy recovery from the remaining 37 per cent is planned. (Waste Recovery Proposal, Contra Costa County Sanitary District, 1975, Brown & Caldwell).

Figure 5.2

Energy Potential of Recycled Materials

<u>Material</u>	<u>BTU x 1000 Per Ton of Material</u>
Aluminum	200,000
Ferrous Metals	12,000
Glass	1,300

In spite of potential energy recovery, the energy expended in the construction of processing facilities is of considerable significance as is the energy expended in transportation. Overall, conservation is a more energy-efficient strategy than the best recovery schemes.

(6) The Economic Impacts of Energy Conservation

(a) Microeconomic Impacts. Traditionally, both government agencies and private firms have given dominant attention to the initial costs of new projects, rather than their life-cycle costs. Initial costs include planning, land acquisition, and, especially construction costs. Life cycle costs include staffing, utilities, maintenance, and remodeling.

Government agencies, such as Contra Costa County, particularly have attempted to minimize the initial costs of new projects to lessen their financial impacts on the public at the times the projects are undertaken. Initial expenditures must be directly financed out of general tax revenues or by bond issues, or by grants and aids that have indirect effects on government budgets. With the public resisting high taxes and bond issues, it has seemed reasonable to achieve the projects through low initial costs and then to rely on the increased growth of the taxbase and inflation to produce the additional tax revenues to cover higher operating costs. However, it is becoming evident that government can no longer depend on increasing future revenues to automatically cover deferred costs.

³³ Contra Costa County Planning Department, Energy Use and Conservation in Contra Costa County, p. 103-104.

The exponentially increasing annual cost of public employee pensions in such cities as New York and Oakland was one of the first indications that commitments for future tax revenues had outstripped the taxable resources. Now governmental agencies are just beginning to feel the effects of double digit energy inflation which has no apparent end. At least one West Contra Costa County city has eliminated a number of street lights to save on the rising electrical costs. Life cycle costing techniques are now being increasingly utilized at many levels of government to analyze the microeconomic relationship of initial and long-term costs of various projects and programs. Energy conservation typically is an area that may involve increased first costs to achieve lower life cycle costs.

Indications are that energy conservation in buildings is an economically viable alternative, and will become increasingly so as energy costs rise. In terms of an energy economy, it has been estimated, for example, that every BTU required in the construction of a building is matched by another BTU during each year of its life.³⁴ Thus, in terms of energy conservation, front-end investments get returns of 30, 40, 50 or even 100 to 1. Of course this analysis does not necessarily translate into similar economic payoffs. It does, however, suggest the possibilities that could be tapped if the economic consideration of alternative building construction included energy conservation versus nonenergy conservation techniques.

(b) Macroeconomic Impacts. A variety of studies and estimates suggests that we are entering a period in which there will be increasing competition for scarce capital.³⁵ Thus it cannot be safely assumed that all energy-generating demands can be met, because they may encounter a capital shortage that cannot necessarily be overcome by increasing the interest rates. The problem goes beyond national boundaries. Capital currently returns interest rates of 14 per cent or more in some countries. The rapidly growing international capital market, supplemented by the emerging network of multinational corporations, makes possible an economic decision-making structure unlike those which have traditionally prevailed.

The inflationary price implications of scarce critical materials are already evident even in the present stage of the energy problem. Capital for energy-efficient buildings could be a wise macroeconomic strategy. One key study³⁶ predicts that the sources of future investment capital will be heavily affected by increasing energy costs resulting in a severe capital shortage within the next 20 years. One solution to the projected shortage is to convert consumption expenditures to capital investments, an alternative that must be implemented now to be effective later. The study concludes that the energy conservation strategy is economically self-sustaining at a better rate of return than is generally expected from long-term investments in construction and in utility or energy systems.

³⁴American Institute of Architects, Energy and the Built Environment: A Gap in Current Strategies. (Washington, DC: T. Butt, 1964, p. 18.

³⁵Ibid.

³⁶American Institute of Architects, A Nation of Energy-Efficient Buildings by 1990. (Washington, DC: T. Butt, 1975) p. 13

A recent issue of Time Magazine reports:³⁷

.....Just three years after the Arab oil embargo that shook consuming nations and threatened economic disaster, most of the world's consumers seem to have forgotten that an energy crisis ever existed.

.....The lull in the energy crisis has been the result of two developments for which governments can take no credit: A succession of mild winters and the global recession of 1974-75. Both held down fuel consumption and tended to obscure a frightening fact: in the long run, the world is going to run out of oil. Known reserves may well be nearing depletion before the end of the century, sending crude production on an irreversible decline - and before that point is reached, demand pressures will push petroleum prices to confiscatory levels, threatening economic chaos. So current consumption patterns cannot continue indefinitely.

6. ALTERNATIVES

A. No Project

A continuation of existing uses on sites affected by the proposed project would avoid all of the potentially adverse impacts related to increased energy consumption and changes in fuel types. However, it is conceivable that overcrowding of existing facilities, or the use of construction of similar facilities at other locations to provide the same services as the proposed project, would still result in some net increase in energy consumption and concomitant adverse environmental impacts.

B. Other Development of the Proposed Site

An alternate type of development for the proposed site would have to be evaluated according to its own characteristics. Potential types of development could have energy-related impacts ranging from environmentally beneficial to far more adverse than the proposed project.

C The Same Project at Different Location(s)

Locating the proposed project in other areas of Contra Costa County either wholly or in smaller scattered components could significantly change its environmental impact.

³⁷"Fiddling Dangerously While Fuel Burns:." Time. December 20, 1976 p. 48-52

Locating the project in an area with cooler summers would substantially reduce or possibly negate the need for summer air conditioning (cooling). In August, Martinez has one of the highest mean daily maximum temperatures in the County (93.4°F.) compared to Richmond (69.0°F.) or even Walnut Creek (85.5°F.)³⁸. Martinez has 500 cooling degree days whereas Richmond has none.³⁹ A substantial amount of the estimated electrical energy requirement for the proposed project will be to run chillers and fans for summer cooling.

Space heating requirements would also change for some alternate locations. Martinez has one of the lowest heating degree day totals in the County (2500), but the range of variation geographically is not nearly so large as in cooling degree days. Richmond, for example, is only slightly higher with 2550 heating degree days, and Walnut Creek about 12 per cent higher with 2800. Fewer heating degree days could result in less space heating fuel consumption and slightly less water heating fuel consumption.

The effect of solar heat gain to offset space heating losses or intensify the need for summer cooling is another factor that is a function of location, but data are not available in sufficient detail to draw any significant conclusions.

A change in location could also affect the amount of energy used in transportation related to the project. The Martinez location is central to the County as a whole and located among various existing legal, law enforcement and administrative services which operate in conjunction with the project.

The location of the project as a portion of a rather dense urban clustering of related services follows the common sense viewpoint that the more dense the development, the more energy-efficient it would be. But there are a variety of other dimensions to the question. If we were successful in developing the "self-sufficiency" concepts to include recycling or ecologically closed systems insofar as possible, then the benefits of centralization might be offset, and a richer array of qualitative options retained.

7. MITIGATION MEASURES

Potential mitigation measures which could minimize the energy-related impacts of the project involve principally either a reduction in the overall consumption of energy or a switch to sources with reduced adverse environmental impacts. In some cases a mitigation measure to reduce one impact may intensify another, and these tradeoffs are noted where applicable.

³⁸Pacific Gas and Electric Company, Mean Hourly Temperatures (San Francisco: by the author, 1967).

³⁹Contra Costa County Planning Department, Energy Use and Conservation in Contra Costa County, p. 28.

A. Title 24 Energy Standards for Non-residential Buildings

Adherence to proposed Title 24 energy standards has been offered by the architect as a mitigation measure in itself, but the validity of this claim is debatable.⁴⁰ Title 24 sets only minimum standards and does not appear to be designed to encourage mitigation measures beyond those minimums.

Although there have been no detailed studies directed specifically to detention facilities, it is interesting to note that a recent study⁴¹ by Arthur D. Little (ADL) for the Federal Energy Administration concluded that the use of ASHRAE 90-75 (American Society of Heating, Refrigerating and Air Conditioning Engineers) alone could not reach the GSA budget of 55,000 BTU/gsf/year for office buildings. Five types of conventional buildings were compared to 90-75 modified structures in four areas of the United States. ADL found that the lowest unit-energy consumption after applying the 90-75 approach was 67,000 to 72,000 BTU/gsf/year. In the west the consumption dropped to only 107,200 BTU/gsf/year.

In order to prove a point, the GSA now has a federal building under construction in Manchester, NH⁴², which is projected to achieve well under the 55,000 BTU/gsf/year performance criteria consumption rate.

⁴⁰Alameda County Superior Court Judge Robert Bostick has ruled that current law demands performance standards, and that the Title 24 prescriptive regulations the Energy Resources Conservation and Development Commission had targeted for February 1977 enforcement were thus a denial of legislative intent. The court enjoined ERCDC from enforcing those standards, and instead suggested that it proceed with its plan to evolve performance guidelines. The proposed Title 24 standards, which are modeled after ASHRAE Standard 90-75, therefore do not yet have the effect of law, but prudent design professionals are observing the standards for major projects that are likely to be still in the "pipeline" when the legal issues are resolved.

⁴¹Arthur D. Little, An Impact Assessment of ASHRAE 90-75, for the Federal Energy Administration (Washington, DC; U. S. Government Printing Office, 1975).

⁴²Kusada, Tamani; Hill, James E.; Liu, Stanley T.; Barrett, James P.; and Bean, John W., Pre-Design Analysis of Energy Conservation Options for a Multi-story Demonstration Office Building (Washington, DC: U. S. Department of Commerce, National Bureau of Standards, November 1975).

B. Program Priorities and Design Philosophies

(1) The Opportunity for Energy-efficient Design

Inherent in the programming and design of a new building is the opportunity to plan for reduced energy consumption or the use of low impact energy resources. As the owner of the project, the citizens of Contra Costa County, through their elected representatives and administrative staff, have discretion as to the energy-related requirements for building design, subject to any legal and technological limitations which may apply. The detailed planning for building energy utilization has been further delegated to the architect where it is maintained that the constraints of a relatively fixed space program, site and budget have further limited the opportunities for energy-efficient design.

The architects for the project, Kaplan and McLaughlin do not consider low energy consumption high priority.⁴³ The architects equate energy efficiency with higher construction costs and have stated that a functionally specific space program and a fixed capital budget are the dominant priorities. As a result, any energy-efficient design characteristics may be incidental to functional considerations except when necessary to satisfy the minimum requirements of the proposed California Title 24 Energy Conservation Standards for Non-residential Buildings. Principal responsibility for interpretation of and compliance with Title 24 has been delegated to the mechanical and electrical engineers, Donald Bentley and Associates.

A change in priorities could result in improved energy performance and reduced adverse environmental impacts. As an example, the decision to design for high dependence on mechanical and electrical energy systems for lighting, heating and cooling are functions of both the designer's philosophy and technical ability to explore other options. Instructions from and the attitude of the owner (the County) are additional factors.

The prescriptive standards of Title 24 are designed to reduce energy used for internal climate control primarily by limiting the flow of heat through the building envelope. The theory is to reduce heat losses in the winter and heat gains in the summer. This approach may have the net effect of generally improving performances over conventional existing practice, but it has the disadvantage of discouraging innovative building designs that use non-mechanical approaches to building heating and cooling. The standards do allow an optional design route for obtaining an equal level of energy utilization, but there are few incentives to take the optional route.

⁴³Verbally transmitted by Kaplan-McLaughlin staff members during meetings on 26 August 1976 and 9 December 1976.

For the proposed project, there are specific design characteristics of the overall plan and the building envelope that could be manipulated to lower dependence on high energy systems. The orientation, the size, location and placement of glazing, the selection of structural components for appropriate thermal mass or insulative qualities, and the use of natural ventilation are design elements that can be optimized for greater energy efficiency. Both the architect and engineer have frequently cited the energy saving advantages of minimal glazing,⁴⁴ a widely held assumption which is true only in a limited context.

In fact, one highly reputable study⁴⁵ of solar heat gain through windows concludes:

For southern faces, any of the windows considered....which will have high winter solar transparency and are suitably shaded in the summer will be more effective in saving energy than the best insulated wall. Indeed, most of the systems have a net positive energy gain. For the better thermally-insulated window systems this will be true for the east and west-facing window also. This is a very important point because the intuitive feeling that the most effective building design from an energy (presumably not aesthetic) view would be a structure without windows is not true.

The use of 100 per cent exhaust air from cells due to toilets, and the use of mechanical cooling are energy-intensive practices. Donald Bentley and Associates have stated that as a mitigation, either filtered recirculation or such heat recovery devices as run-around coils or thermal wheels are being considered, but no commitment has been made at this time. Natural ventilation is utilized at such modern facilities as the Pleasanton, California, Federal Correctional Center where the measure has been rated as an overall success although it has caused some security problems and resulted in an added construction cost of about \$30 per living unit.⁴⁶

Both natural heating and cooling through innovative "passive" design is a possibility for the proposed project. A new office building for the State of California, now being designed for Sacramento, is projected to be 90 per cent naturally heated and 100 per cent naturally cooled. In addition, the building relies upon sunlight rather than electricity for 80 per cent of the lighting needs. Preliminary estimates indicate that it will not only cost less to construct, but will

⁴⁴See Appendix D.

⁴⁵Berman, S.M., and Claridge, .D.E "The Positive Aspects of Solar Heat Gain Through Architectural Window Systems" in Energy Conservation and Window Systems, ed. by Samuel M. Berman, et al (Springfield, VA: U.S. Department of Commerce, National Technical Information Service, PB 243 117, April 1975), p. 62.

⁴⁶From a meeting with Allan Paar, Federal Bureau of Prisons, 330 Primrose Road, Burlingame, CA, 7 September 1976.

also save \$18,000,000 over the life of the building compared to a conventional structure of the same size.⁴⁷ This does not mean that the same results would be achieved for a detention facility, but it does open up possibilities that may not have been considered for the proposed project.

One example of an adverse effect of natural energies and micro-climates resulting from the project design is illustrated by the interior exercise yard in the proposal. Approximately 80 feet in width and surrounded by walls 30 to 50 feet in height, the courtyard will be almost completely open to the sun in midsummer when temperatures routinely climb into the 90's and almost completely in shade during the coolest winter months. This "feature" of the project may, in fact, prove to be a highly uncomfortable area for much of the year.

(2) The Impact of Increased Energy Efficiency on Building Construction and Operation Costs

(a) First Costs. The assumption that increased energy efficiency is synonymous with increased first cost is a factor with which some experts might take issue.

Several recent studies seem to agree that new buildings designed to meet both prescriptive and performance standards have not only a lower life-cycle cost, but also a lower first cost. In some cases, a study⁴⁸ for the State of California showed minor increased capital costs for energy conservation, but these were often offset in the first year due to energy cost savings.

Similarly, the ADL study⁴⁹ concluded that "The initial construction costs of those buildings modified under the standard's prescriptive/performance approach were shown to be less than those of conventional buildings."

Most of the capital savings are attributable to reductions in HVAC (Heating, ventilation and air conditioning) equipment as well as fenestration. Design costs will increase, particularly the cost of electrical/mechanical engineering design services; however, the ADL study found the payback due to energy savings was less than one year in most cases.

Whether these construction cost savings begin to diminish once the threshold of prescriptive or performance standards has been crossed, resulting in a building even more energy-efficient, has not been fully studied, but intuition would indicate that such is not necessarily the case.

⁴⁷Living Systems, Inc. "With a Little Help From the Sun," Energy Conservation News (Davis: Living Systems, Inc., Summer 1976), p. 6.

⁴⁸Hugh Carter Engineering Corp. Non-residential Energy Conservation Standards, Title 24, Economic and Energy Effectiveness Study, pp. 55-74.

⁴⁹Arthur D. Little, An Impact Assessment of ASHRAE 90-75.

(b) Life Cycle Costs. The design teams' contracts do not provide for detailed or computerized operational simulation of energy systems and life cycle cost analyses until later on in the project development.⁵⁰ It is possible that such analyses might provide data to justify design changes resulting in increased energy efficiency even if such changes caused increased capital costs or a reorganization of budget priorities.

(3) The Impact of Increased Energy Efficiency on Functional and Space Planning Objectives

The question of whether provisions for reduced energy consumption would adversely affect the functional objectives of the project is the most difficult to answer. It may be noted in Figure 7.1 that the proposed Contra Costa County project has a somewhat higher consumption per gross square foot and per inmate than similar facilities in San Diego, California, and Maricopa County, Arizona; and a somewhat lesser consumption than a similar facility in Kane County, Illinois. Differences in climate, construction, mechanical systems and usage would detract from the objectivity of the data, but overall, such comparisons are extremely useful in indicating a range of what is possible.

Although climate does have a very close correlation with energy consumption in buildings, it has been shown that for complex projects, the basic energy required for building use and operation, regardless of the climate, has a much larger proportional effect than that required specifically due to climatic conditions.

Similar buildings in the same climate used for the same purposes can vary by as much as 40 per cent in energy use^{51,52}. Furthermore, usage can vary widely from year to year without similar fluctuations in heating or cooling degree days. Swift increases in energy usage in this County in the last ten years are due most likely to changes in lifestyle, not drastic changes in climatic conditions.⁵³

Two of Contra Costa County's existing detention facilities, for example, were constructed predominantly at a time when lifestyles did not require mechanically chilled air for summer cooling. Partially as a result, the Juvenile Hall complex and the Boys' Ranch complex have electrical loads on a square foot basis only one-third, and the existing main jail less than two-thirds than that projected for the proposed new detention facility.

⁰Robert Voelz, Donald Bentley and Associates, 9 December 1976.

¹Interactive Resources, Inc. Energy Conservation, Analysis and Recommendations for Public Buildings in Contra Costa County, California. (Martinez: Contra Costa County Planning Department, 1976), pp. 2-3.

²Spielvogel, Lawrence G. "Exploding Some Myths About Building Energy Use," Architectural Record, February 1976, pp. 125-28.

³McQuigg, "Weather/Energy Demand Relationships," Vol. VI, Energy 1990 Consultants Report, prepared for Seattle City Light, February 1976, p. 8.5.

Figure 7.1

COMPARISON OF ENERGY CONSUMPTION
FOR SIMILAR DETENTION FACILITIES

Facility	Gross Area (GSF)	Stories	No. of Inmates	Yearly Electrical		Yearly Steam	Yearly Gas or Fuel Oil	Yearly Chilled Water	Yearly Totals	
				KWH/GSF	BTU/GSF				BTU/GSF	Inmate
San Diego	240,000	12	508	15.00	51,180	31,150 ¹	None	65,000	164,103	7.75x10 ⁷
Boulder Co.	135,000	--	300	----- No Information -----						
Chicago	180,000	26	400	----- No Information -----						
Kane Co.	70,000	2	105	16.46	56,151	None	185,140	None	241,280	16.10x10 ⁷
New York	--	12	600 (448 max.)	----- No Information -----						
Maricopa Co.	106,301 (occupied)	1	448	39.01 ³	133,105 ³	None	59,250 ³	None	191,890	4.55x10 ⁷
Bureau of Prisons (Average)	--	--	25,080	-----						
Contra Costa Co. (Existing)	14,476	3	151	21.33	72,778	None	42,753	None	115,531	1.11x10 ⁷
Contra Costa Co. (Proposed)	180,000		383	36.56	124,743	None	102,149	None	226,892	10.66x10 ⁷
Contra Costa Co. Juvenile Hall Complex	160,241	3	196	12.69	117,595	None	None	None	146,820	12.00x10 ⁷
Contra Costa Co. Boys' Ranch	31,194	1	51	12.17	93,393	None	None	None	134,923	8.24x10 ⁷

Notes:¹Assumes 65 per cent efficiency for delivered energy.²Assumes 60 per cent efficiency for delivered energy.³Estimated from seven months records.

C. Specific Examples of Energy Conservation Measures That Could Result in Reduced Consumption

(1) General References

The list of possible design of program modifications that could reduce energy consumption of the proposed project is too voluminous to present in this report. The examples that follow are intended only to provide a sampling of the opportunities and should in no circumstances be construed as comprehensive or exhaustive. In general, an attempt has been made to select areas that are not specifically regulated by Title 24 standards. Considering the limited information currently available on the actual physical characteristics of the proposed project, mitigations may be included inadvertently that are either not applicable or have already been included into the project by the design team. In the References under Energy Conservation and Building Design is a list of selected comprehensive and up-to-date annotated sources for energy conservation in buildings that provides many potential mitigation measures in addition to those included in this report.

(2) The Site

Deciduous vegetation, including both trees and ground cover, can be used to shade walls and paved areas adjacent to the building to reduce solar radiation striking the building and thereby reducing summer cooling loads. Reduction in the amount of parking area could provide space for additional planting. If options exist which will promote car-pooling at the cost of providing paving near the building, they will usually result in overall energy reductions.

(3) The Building

(2) Construction Materials. The use of low energy content construction materials and methods can reduce the indirect energy inputs required for construction. A detailed survey research document prepared by the Center for Advanced Computation (C.A.C.) at the University of Illinois, entitled Energy Cost of Commerce Goods, 1963 and 1967⁵⁴, is a landmark study of energy flows in the American economy which could be utilized to audit the energy content of construction materials and services. The research is based on the principle that every flow of economic goods requires an energy investment, from processing of raw materials to retail sales of the finished product. The energy inputs of administrative functions (lighting and heating office buildings, for example) are thus included as part of the total energy cost of a product or service.

⁵⁴Herendeen, Robert A., and Bullard, Clark W., III, Energy Cost of Commerce Goods, 1963 and 1967 (Urbana, IL: Center for Advanced Computation, University of Illinois at Urbana-Champaign, November 1974), p. 15.

Based on the principle that energy inputs are directly related to dollar costs, the total energy input is measured in BTU's per dollar cost to the producer of the product or service. Calculations on this basis were made for 357 types of products and services, representing many sectors of the American economy.

(b) Daylighting. Window area and placement on each of the facades determines the amount of available outdoor light for daylighting. It may be beneficial to decrease or increase the area of glazing to achieve the state where daylighting can effectively replace a portion of artificial illumination. This could reduce the amount of energy consumed for excessive artificial illumination, as well as the energy consumed in removing excess heat from that illumination - but only if the artificial system is deactivated when its output is duplicating natural light.

In many cases, this deactivation is the only thing required to conserve energy through the use of natural light. Similarly, the use of natural light will reduce unwanted heat gain in the summertime only if compared to a situation where both natural and artificial light are being provided. Natural light will eventually become heat within a space similar to electrically produced light. If, however, a situation exists where windows admit natural light, and artificial light is also provided, the elimination of the redundancy will reduce the unwanted heat build-up.

If skylights are used for natural lighting, they could be double or triple glazed to reduce heat loss. If windows are used for natural lighting, the light will penetrate more deeply into a space as the window is raised in height in the wall. Windows planned to make beneficial use of winter sunshine should be positioned to allow occupants the opportunity of moving out of the direct sun radiation. Judicious use of reflective surfaces, such as sloping white ceilings, can enhance the effect of natural lighting and increase the yearly energy saved.

(c) Thermal Mass and Location of Insulation. A wall of large mass has the advantage of high thermal inertia which modifies the U value effect on heat transmission by expanding the time scale. For instance, a wall of high thermal inertia, subjected to solar radiation for one hour, will absorb the heat at its outside surface, but transfer it to the interior over a time period as long as six hours. Conversely, a wall having the same U value, but low thermal inertia, will transfer the heat in perhaps two hours. One example of the effect is the potential to absorb high interior heat loads during the day and dissipate them into the cooler night by both convection and radiation.

Studies show that the best location for insulation is outside of the mass of the building. This makes it possible for the mass of the

building to act as thermal storage, thus dampening the effects of diurnal weather variations and indoor occupied-unoccupied temperature cycles.

If possible, insulation should be located not only on the outside of a wall section, but also on the outside of the structure itself. This reduces air leakage through construction joints and heat loss by eliminating the effect of cold bridging through-the-wall concrete or steel.

Bearing walls of relatively large mass may be combined with structural support. Buildings constructed of a skeleton frame and a skin or curtain wall are generally thin and do not have sufficient thermal mass for inherently conserving energy.

(d) Still Air Film. The existence of a still air film on building facades reduces heat loss and gain through the facade. The external film efficiency can be increased to maintain the film on existing buildings by the application of a textured surface. Many materials available today are designed for use as protective coatings and for improving the appearance of weathered exterior walls. However, the use of "textured surface" will increase the total surface area of the building in question, which will, in turn, increase both the radiated and the surface-to-air heat transfer.

Vines are another method of maintaining the still air film which, like the protective coatings, serve a dual purpose. They also provide shade. However, vines may eventually destroy certain building materials (possibly resulting in the eventual increase in energy use).

(e) Color. Light or dark color of exterior walls and roofs affects heat gain and heat loss. On exterior surfaces, light colors reflect solar radiation, and therefore, decrease solar heat gain; dark colors generally absorb solar radiation, and therefore, increase solar heat gain.

Specific evaluation should be made to determine if unwanted heat gain will promote more energy use than will unwanted heat loss.

In building interiors, color plays an important role in actual and apparent energy efficiency. The phenomena of selective absorption, reflection and transmission are of great practical value.

Light colored walls, floors and ceilings, for example, have greater reflectance than dark colors, resulting in more effective use of available light.

Color selection should be carefully considered in view of the available light source (i.e., natural, incandescent, fluorescent, etc.). Where efficiency is the goal, incandescent light should be controlled with materials that absorb the minimum red and yellow; mercury light should be controlled with materials that absorb the minimum blue and green. This is not to say that the color of materials adds to the efficiency of light at the primary source, but they do have an effect on apparent intensity.

The apparent temperature of spaces is also affected by color. Interior rooms and basements, in particular, "feel" warmer or cooler depending upon the colors used in them.

Although walls may well be the most obvious expanse of color on the interior, other aspects should not be neglected when choosing colors. The furnishings as a whole influence efficiency levels.

Carpeting should be considered not only for the effect of color in lighting efficiency, but for thermal comfort as well, particularly over slabs on grade.

(f) Smoking Areas. If smoking areas can be segregated from non-smoking areas, near existing ventilation systems, then excessive ventilation might not be required throughout an entire floor area.

(4) Lighting Systems

Lighting is a major consumer of electrical energy in buildings, both for the energy required to operate the luminaires and for removing the heat being generated from these luminaires in air conditioned space.

Energy consumption for lighting (Kilowatt-hours) is the product of power input to the luminaires (Kilowatts) and the time duration for which the luminaires are being used (hours). Thus, to achieve maximum energy saving from lighting, both power input and time of use should be controlled.

Power input can be reduced by the proper design of the lighting systems which includes the selection of visual tasks, light sources, room finishes, wiring and switching. Even though the time of use for lighting is directly related to building function and operation policy, individual voluntary effort to cooperate with the objectives will play a major role in achieving the goal for energy conservation.

The limitation of power in lighting systems is the first step toward energy conservation.

(a) Task Lighting. Provide the required illumination for the visual tasks in the working and living areas only and appropriate lower levels in the general areas, such as corridors, storage and circulation areas.

(b) System Selection. There are numerous types of lighting systems utilizing various light sources. Each system has its proper applications for visual tasks related to the space. However, certain systems, such as an indirect system, are inherently less power efficient and should be avoided.

(c) Efficient Light Sources. Different light sources have different characteristics (color, life, physical size, and lumens output per watt input), and the choice should be the most efficient source that is appropriate for the application.

(d) Efficient Luminaires. Efficient luminaires produce a greater amount of light on the task with less power input. Lighting effectiveness is measured by the coefficient of utilization (CU) of the luminaire in a particular space. Luminaires of identical appearance may vary considerably in their performance due to internal construction, control medium and candle-power distribution. When properly applied, high efficient parabolic louvers, polarized diffusers, or bat-wing type prismatic lens are just a few of the available media which can improve the visual performance of the task as measured by the higher Equivalent Spherical Illumination (ESI Footcandles) rather than by the "raw footcandles."

(e) Room Characteristics. Dark colored surfaces absorb light, whereas light colored finishes may cause glare. In general, ceilings should be finished in white (80-90 percent reflectance); walls, except for small accent areas, should be medium to light (50-80 per cent); and floors should be light medium to medium (20-50 per cent). Avoid the use of specular surfaces within the normal visual field. Larger rooms are more efficient than smaller rooms because there is less wall surface to intersect and to absorb the light. The amount of power requirement for small rooms with darker room finishes can require more than double the amount of power for large rooms with lighter room finishes.

(f) Layout. Common practices have given too much emphasis to geometric pattern of luminaires for aesthetics and uniformity. Energy-conserving design must give preference to better visual performance for the user with secondary concern for geometry. In general, an effective lighting layout should avoid locating luminaires directly in front of the visual task viewed by the user.

(g) Control. Use separate and convenient switching for task areas of different use patterns. Switching should always be designed to utilize daylighting whenever practical.

Lighting controls by manual or automatic switching can have a major effect on energy consumption. Past design practices have given too much emphasis on initial wiring economy and personnel conveniences rather than energy conservation. It is true that frequent switching of lamps (particularly fluorescent lamps) will shorten the life of the lamps. However, energy savings should offset the cost of lamps whenever the lights (fluorescent) can be turned off for over a five-minute period. The life of incandescent lamps is generally not affected by their operating cycles. HID lamps must be limited in switching due to the long restarting time required (usually over five minutes).

Effective switching systems cannot always rely on manual operations. However, automatic switching should be used with discretion. It should be used only for large areas as the cost of automatic switching devices is quite high.

(h) Exterior and Security Lighting. Eliminate exterior lighting except where the lighting is to be used for the purpose of identifying the building entrances and egresses, and/or for security. Use efficiency light sources (high pressure sodium or HID lamps). Use efficient luminaires (prismatically controlled lens, rather than general diffused, decorative geometric forms). Use photo-cell control for turning "on" exterior lights and time clock for turning "off" the exterior lights. Coordinate street lighting with security lighting and eliminate duplication.

(5) Power

An electrical power system by itself without connected loads is not an energy-consuming system. Power losses in a building are generally limited in magnitude. However, there is still room for improvement in power-consuming equipment used for lighting and building mechanical systems.

(a) Distribution System. A power distribution system consists of transformers, switchboards, panelboards and feeders. A high distribution voltage (480 v.) is being planned for the building and is generally preferred for better voltage regulation and lower power loss.

(b) Power Factor. Building power loads are predominantly of the inductive type, contributing an overall low lagging power factor which, in turn, causes more power loss. In order to minimize this problem, the following rules should be followed:

Use only high power factor ballasts (90 per cent or more) for fluorescent and HID lamps.

Size motors to match the actual load rather than oversizing the motors. Caution should be used, however, in sizing motors to actual load.

Install capacitors at the load end of motors or inductive equipment that require power factor correction.

The overall distribution system power factor should be maintained at 85 per cent or higher.

(c) Other Design Considerations. Specify bolt-on type circuit breaker panels in lieu of plug-in type. Use 440 volt motors in lieu of 220 or 208 volt motors whenever practical. Use three-phase equipment rather than single phase equipment whenever practical. Reduce length of branch circuits by locating power distribution centers close to the load. Increase feeder size to limit the voltage drop based on life cycle cost benefit studies. Use direct-coupled motor drives rather than belt-driven for mechanical equipment whenever applicable.

Balance the single phase loads on three-phase four-wire systems (120-208V, or 277/480V) so that no excessive power loss will concentrate on only one of three phases. Use proper compression connector lugs for aluminum cables to avoid high resistance and power loss at the terminals. Provide automatic controls for the building load demand so that no excessive peak demand will be experienced. Provide adequate preventative maintenance on power distribution equipment so as to assure minimum power loss from loose connections and/or contacts. Install timers to turn off large equipment when portions of the building are not occupied.

(6) HVAC Systems

(a) Heat Recovery. Passing contaminated air through charcoal and similar filters to remove odors, and then recycling the clean air, can reduce exhaust air quantities. Many opportunities to reduce the energy demands of ventilation systems include transferring energy from exhaust air to the incoming air stream by heat exchangers that transfer sensible and/or latent heat. The selection of the particular device depends on the thermodynamic qualities of each air stream - the exhaust upon the room conditions and the intake upon climatic conditions.

Extract waste heat from boiler flue gas by various methods such as extended surface coils, heat pipes, flue gas condensate, heat exchanger (reclamation of latent heat in flue gas), etc.

(b) Outdoor Air Intakes. Outdoor air which is used as makeup to replace air exhaust through hoods imposes a heating and cooling load which can be materially reduced by a direct supply to the hood instead of through the air supply system. Air supplied to a hood need only be tempered in the wintertime and requires no cooling in the summertime.

Care should be taken in locating outdoor intakes so that they do not pick up unwanted radiant heat reflected from adjacent roofs or wall surfaces.

(c) System Optimization. The climate has a major effect on building heat loss and heat gain through the building envelope and on the energy required for ventilation to combat infiltration. The peak loads used for design conditions determine the size and capacity of the heating and ventilating systems. The duration of the temperature and humidity conditions, modified by wind and sun, determine the yearly energy consumption.

A detailed analysis of ambient outdoor conditions is necessary in order to optimize the system or systems that can be used in sequence to handle interior area heat gains during the spring, winter and fall. Maximum energy conservation results from using adiabatic cooling, economizer air cooling, and mechanical refrigeration with or without energy storage, in accordance with wet and dry bulb outdoor temperatures and corresponding interior zone heat gains. A sophisticated control system is required to accommodate such a sequence.

The designer, through computer analysis or other means, could compare systems and quantities, etc., because simple minimizing of all systems and quantities may not be the most energy conserving. A larger toilet exhaust system may, for example, be desirable if waste heat-cooling recovery is an added advantage with the larger amount of air quantity involved.

In order to assist proper and efficient operation of systems, consider the use of a monitoring and automation system which utilizes a compiler-oriented computer and which is oriented to operation and maintenance with anticipated features rather than a monitoring system which provides a great amount of data lacking credibility.

(d) Heat Storage. The use of thermal storage, particularly for cooling, can have the effect of reducing peak electrical loads and making system operation more efficient by running equipment in off peak hours when outdoor summer temperatures are coolest. In an air-conditioning system it is possible to cool a tank of water or other storage medium if excess cooling capacity is available during operational hours. One of the

attractions of this approach is that the temperature difference between cold storage (say, 45°F at the coldest) and building temperature (~70°F) is less than the temperature difference between hot-storage and room temperature. As a result, less cooling effect is lost from cold storage than from hot storage. Moreover, cold storage is preferable to hot storage because losses from hot storage in a building add to the summer air-conditioning load.

In addition, 1 Btu of cold storage is 1 Btu of cooling; 1 Btu of hot storage is equivalent to less than 1 Btu of cooling since the air conditioner is not 100 percent efficient.⁵⁵

All materials possess the property of thermal storage to a greater or lesser degree. In the case of a building, the structural materials are almost always in the process of either absorbing heat from or delivering heat to the interior space. This effect is more pronounced in the cooling operation where greater air temperature variation is tolerated. Storage tends to reduce the rate of temperature change and helps in some measure to reduce the peak equipment requirements. In this sense every heating and cooling system can be said to involve heat storage in some degree.

Many attempts have been made, particularly in recent years, to increase the heat-storage effect by using special heat-storage materials as part of the heating or cooling system. The result has been a reduction in the size of the heating or cooling equipment necessary to take care of peak demands.⁵⁶

In general, there are two types of heat storage systems that have been employed: (1) sensible heat storage systems; and (2) latent heat storage systems. Usually, the latter is actually a combination of the two, making use of some sensible heat storage in addition to the latent effect.

One study summarizes the advantages of thermal storage.⁵⁷

First Cost. It may be cheaper, especially if added to a central chilled water plant.

⁵⁵Kreider, Jan F. and Kreita, Frank, Solar Heating and Cooling, (Washington, D.C.: Scripta Book Company, 1975), p. 192.

⁵⁶ASHRAE 1976 Systems Handbook, p. 11.6.

⁵⁷R. T. Tambllyn. "The Case for Thermal Storage." Solar Energy Storage Subsystems for the Heating and Cooling of Buildings, Proceedings of the Workshop Held in Charlottesville, Virginia, April 16-18, 1975. (Washington, D.C.: U.S. Department of Commerce, Natural Technical Information Service, Report No. NSF-RA-N-75-041).

Operational Cost. It almost always saves fuel. It will always save electric demand cost if substituting for an electric chiller.

Equipment Delivery. Chillers, steam turbines, reduced voltage starters, and transformers are becoming long delivery items. Concrete storage can be placed underground in a matter of weeks. The cover can be resodded or used for tennis courts or parking platforms.

Utility Bonus. Every kilowatt stripped off demand saves the utility up to \$1,000/kw for a new plant. This saving may exceed all other benefits of thermal storage.

Future Heat Reservoir. It offers an ideal sink for the introduction of future heat, when economic, from solar collectors and clean incineration cycles.

(7) Plumbing

(a) Domestic Hot Water. Provide warm water at 105°F. at the rate of 1-1/2 gal/day, per person, or at a flow rate of 1/4 gal/min/lavatory and 3 gal/min/shower. Individual showers use less water than gang showers. Ceramic-type valves for showers and lavatories reduce leakage and maintenance. Use thermostatic controls (mixing valves) where applicable and provide insulation beyond minimum standards. Do not heat water and store it at higher than utilization temperature.

Where special functions, such as dishwashing, require hotter water, provide a local booster heater rather than heat all water in the building to meet the localized conditions. Use cold water in laundry and permanent press prison clothing. Avoid common practice of providing hose bibbs in food service areas for hot water supply. Water and energy are wasted by workers using hose rather than alternate clean-up methods.

(b) Drinking Water. Provide drinking water at 55°F.

(8) Food Service Operations

(a) Vision Panels. Use vision panels on refrigerators to reduce opening doors.

(b) Equipment Sizing. Select equipment sized to task; avoid oversizing.

(c) Ovens. Use convection-type ovens rather than prevalent rotary ovens which require a long warm-up period. Microwave ovens may be best if convenience-type feeding is used.

(d) Ice Machines. Ice machines may be preferable to large-scale refrigeration of soft drinks (in commissary-type areas).

(9) Solid Waste

The savings in raw source energy may be considerable by implementing the following:

(a) Heat Recovery. Install on-site waste heat recovery incinerators for disposal of solid wastes. The waste heat can be used for space heating, ventilation, water absorption, refrigeration, or other thermal uses. Air quality standards may preclude this mitigation.

(b) Re-cycling. Separate and salvage usable materials which have a commercial value. Re-cycling many materials consumes less raw source energy than producing virgin materials and could have economic benefits as well.

(c) Composting. Consider the use of solid waste for composting.

(10) Operation and Maintenance

Operation and maintenance are extremely important in energy conservation. One expert claims that the one factor, more than any other, that determines energy consumption of a building is how it is used.⁵⁸ In order to assure proper operation and maintenance, the mechanical and electrical systems must be designed and located in a manner which will permit ready access to equipment. Proper controls, pressure and temperature gauges, filter gauges, tube-pulling space, and access doors to equipment rooms with air handling units must be provided to permit proper operation and maintenance.

(a) Personnel and Training. It is important that the operating personnel be fully trained in the operation of all building mechanical and electrical systems in order to operate and maintain the building efficiently. Proper maintenance requires skilled personnel, perhaps at higher labor rates which can often

⁵⁸Spielvogel, Lawrence G. "Exploding Some Myths About Building Energy Use," Architectural Record, February 1976, pp. 125-28.
"How it is used' has more impact than the type of hvac system, or the boilers, or the chillers, or the energy source. More than how much glass, or insulation, or lighting a building has. It is the people who occupy and building that place the demands on systems and use energy. It is the hours of operation of systems and components that are the major determinant of energy consumption. What runs most of the time, and typically at full load?"

be offset by lower operating costs. For example, proper operation can reduce the energy for heating and air conditioning in some cases more than 50 per cent.

When a new system is installed, the operating personnel should be trained by the manufacturer of the equipment. A factory training course, in addition to on-the-job training with the equipment, should be required. During the on-the-job training, the design team should participate in training operating personnel as well as owners in proper operation and maintenance procedures.

(b) Operation and Maintenance Manuals. All systems should have comprehensive operation and maintenance manuals prepared by the mechanical and electrical designers, in cooperation with the architect.

The manuals should describe the design intent of the systems, capacities of all mechanical and electrical components of the systems, the modes of operation of each system under varying cooling and heating load conditions. The operating efficiencies of each major component should be described under varying load conditions. All maintenance procedures and frequencies should be detailed in order that the operating personnel maintain the equipment operating as efficiently as possible. The manuals should include schematic diagrams of the systems and equipment, piping diagrams, and electrical and control system diagrams.

Maintenance frequencies and details regarding methods and materials for all mechanical and electrical equipment should be a part of the manuals.

In addition, the equipment schematic drawings and electrical and control drawings, along with operating instructions, should be posted on each major piece of equipment.

It is also necessary to outline the procedures for purchasing parts and equipment.

(c) Load Demand Controls. Use load demand controls on electrical equipment; valuable in trimming peak loads. Initial investment of \$27,000 at Morgantown, WV, Federal Bureau of Prisons Detention Facility saved an estimated \$80,000 in first year of operation alone.⁵⁹ Square D is one manufacturer of controls.

D. Total Energy Systems

For years the natural gas industry promoted the total energy concept as a competitor to electricity. In a total energy system, fuel is used

⁵⁹Allan Paar, Federal Bureau of Prisons, 7 September 1976.

to generate electricity and/or mechanical energy, and the waste heat is used for space heating, water heating, and perhaps for absorption air conditioning. The Caterpillar Tractor Co., for example, offers total energy installations based upon its diesel-electric generators plus heat recovery systems. Total energy systems for commercial buildings, apartment complexes, and industries can offer overall efficiencies approaching 70 per cent. Such a system is now in use at the San Diego Metropolitan Correctional Center. The technology exists for some immediate applications. Further research could make total energy more attractive by perfecting advanced heat storage techniques and by developing ways of balancing electric and heat loads within building systems. Some research and innovation in institutional arrangements are needed, such as alternative forms of ownership of total energy systems; use of back-up in case of system failure; and use of heat or electricity produced in excess of the systems needs. Improved arrangements would permit full use of the output of total energy systems, attain the economies of scale in purchase, installation and maintenance of systems, and reduce the risk to energy users of major equipment failure.⁶⁰

E. Non-depletable Energy Sources

(1) Solar Energy

(a) Applications. Solar energy offers probably the most technologically feasible and cost-effective potential source of non-depletable energy for the project. The cost and technological complexity of solar utilization is generally inversely proportional to the highest temperature required in the conversion process. Ranked below are potential applications in descending order of economic attractiveness:

1. Domestic Hot Water Heating
2. Space Heating
3. Space Cooling
4. Steam for Electrical Generation.

One exception to the temperature relationship is direct solar conversion to electricity - a process technologically proven but so expensive as to be eliminated from consideration in this report, as is steam production for electrical generation.

(b) Domestic Hot Water. Domestic hot water is by far the best potential candidate for solar utilization. Estimates of domestic hot water demand have not been provided, but we estimate

⁶⁰Committee on Science and Astronautics, U.S. House of Representatives, Ninety-Third Congress, Report on Conservation and Efficient Use of Energy, (Washington, D.C.: U.S. Government Printing Office, 1974).

30 to 60 gallons per day⁶¹ per inmate for a total of 11,490 to 22,980 gallons per day total.

Using an average of the high and low daily estimate (17,235 gallons) raised 65°F. results in 33,960 therms equivalent of hot water consumed yearly at 110°F. to 180°F. at the point of use. With a 65 per cent efficiency in fuel oil conversion at the boiler, the total annual input for domestic hot water is estimated at 52,246 therms or 73,145 gallons of No. 2 fuel oil.

Interactive Resources, Inc., calculates that a solar-augmented domestic hot water system with 10,000 square feet of collector, costing an additional \$277,000, could supply 83 per cent of the total water heating load. At today's prices of approximately \$0.35 per gallon of fuel oil, the yearly savings would be \$21,248.

The use of low-flow showerheads and other hot water conservation techniques could save 30 to 50 per cent of the projected use and thereby result in a proportional reduction of the solar system cost and its potential for yearly savings.

Assumptions regarding the yearly escalation of fuel costs, the yearly consumer price index rise, a discount rate, maintenance costs, and the functional life of the solar system would have to be used in a life cycle cost analysis to determine the economic attractiveness of incorporating such a system in the building design.

Bentley Engineers notes that using solar for hot water heating might reduce the space heating load to the point that natural gas may become a feasible alternative for space heating. Natural gas currently costs about \$0.19 per therm whereas fuel oil costs about \$0.26 per therm. Natural gas can be burned slightly more efficiently than fuel oil.

At least three detention facilities in the United States⁶² are planning to utilize solar energy for one or more applications. In fact, for the Bastrop, Texas facility, a primary design consideration was "...the possibility of installing a solar energy collector and delivery system when feasible. The central issue

⁶¹See Appendix J From Records of the Federal Correctional Institute, Tallahassee, Florida, and projections for the Federal Youth Center at Bastrop, Texas.

⁶²Federal Youth Center, Bastrop, Texas; Federal Correctional Institute, Tallahassee, Florida; and Community Correctional Center, Tampa, Florida. (See Appendix J).

of using solar energy as a power source for the Youth Center was not whether it should be done, but when.⁶³

All three proposals include the development of an on-the-job training program in solar energy with inmate participation, a possibility that has been rejected for the Contra Costa County project due to the short periods of incarceration involved.

(c) Space Heating. Whereas hot water requirements are relatively constant year 'round, space heating loads are highest in the winter when solar insolation is maximum. For this reason, as well as increased equipment complexity, space heating with mechanical solar systems is not as economically attractive as hot water heating, but it is highly feasible from a technical standpoint. Solar space heating systems are now operating successfully in several residential and non-residential structures around northern California. A detailed life cycle cost analysis could determine the feasibility of mechanical solar space heating for the proposed project.

(d) Space Cooling. Space cooling with mechanical solar systems, using absorption chillers, is even less economically attractive than space heating. Even though a number of systems are technically feasible as well as operational, the applications are not highly dependable at this time and should be considered still experimental. Space cooling by nocturnal radiation is a simpler alternate approach that may be applicable to the proposed project. Solar space cooling should not be totally rejected without some consideration, but it is unlikely to prove to be an attractive investment.

(e) Funding Sources for Solar Applications. Through implementation of the Solar Heating and Cooling Demonstration Acts of 1974, millions of dollars are now being made available for both residential and non-residential solar demonstration projects throughout the United States.

Information on the non-residential grant program, which is open to virtually any application, may be obtained from the Division of Solar Energy, Energy Research and Development Administration, Washington, D.C. 20545.

In addition, funding is being provided by utility companies (P.G. and E. has a very active solar demonstration program) and the State of California Energy Resources Conservation and Development Commission.

⁶³InterTechnology Corporation, Grant Application Proposal to ERDA for Bastrop, Texas, Federal Youth Center Solar Energy System, p. 1.

None of these sources is a certainty, but hundreds of thousands of dollars have already been made available for demonstration projects in California, and the available funding grows every year.

(2) Waste Recovery

Electrical power generation or heat resulting from the combustion of wastes or waste by-products, such as methane gas, is a technically feasible source of energy. However, small scale systems have not yet proven to be dependable or economically attractive. On a larger scale, the Central Contra Costa Sanitation District has recovered and used methane from sewage for 20 years. The planned new treatment facility will include combustion of solid waste and sewage sludge for steam generation of electricity sufficient to run the plant. The city of Seattle plans to recycle trash and garbage into marketable industrial ammonia. Methanol, a high quality fuel which can be used in vehicles as well as in buildings, is produced by processes similar to ammonia production. The Combustion Power Company, a Menlo Park firm, has developed a solid waste fueled power plant which generates 1000 kilowatts of electricity from 100 tons of garbage a day. This scale of energy recovery is suited to smaller communities or to provide power for municipal facilities.⁶⁴

(3) Wind

As a source of electrical power, wind has proven technically feasible in Contra Costa County. The Interactive Resources, Inc., Wind Test Facility, which operated in Point Richmond for nine months of 1976, provided extensive data on the 6KW Electro, one of the world's largest commercially available wind turbine generators. Although wind could provide some power generation at the proposed site, the installation most likely would be far from economically attractive due to the high current cost of wind systems and the lack of substantial high energy winds at the site.

P. G. and E. is one of a selected few utility companies in the United States now being considered for an ERDA-sponsored demonstration wind power generating facility. The P.G. and E. proposed site is at Point Arena, and, if implemented, would provide power to any user connected to the system.

8. SUMMARY

The project, as planned, will result in a net increase in the amount of energy consumed at the existing site of the proposed project and by the existing detention facility. The increases will be principally in

⁶⁴Contra Costa County Planning Department, Energy Use and Conservation in Contra Costa County, p. 26.

electricity and fuel oil, while natural gas consumption will decrease.

- (1) An irreversible expenditure of energy and capital resources for demolition of existing facilities and construction of new facilities both at the project site and for production and delivery of fuel and electricity, supplying water, treatment of sewage, and disposal of solid waste.
- (2) An increased long-term commitment for fossil fuels with the concomitant environmental and economic impacts related to extraction, delivery, and combustion.
- (3) An increased long-term commitment for electrical power with the concomitant environmental and economic impacts related to the extraction, transportation, and conversion of primary energy sources for generation, some of which are non-renewable.
- (4) An increased long term commitment for energy used in water supply, sewage treatment, and solid waste disposal.

Other than possible beneficial social impacts related to the building function (which are beyond the scope of this report), there will be a net adverse impact to the environment as a result of the increased energy consumption caused by the project construction and operation. Whether the adverse impacts are significant, or whether they are mitigated by beneficial results, is a value judgement that must be made within a larger informational context.

A number of mitigations and alternatives that reduce energy consumption or shift consumption to energy sources with fewer adverse impacts are technologically feasible. Only detailed analyses, including in some cases life cycle costing analyses, will reveal the effects, if any, that decreased energy consumption efficiency might have on the economics and function of the project. These trade-offs should then be considered in the context of the comprehensive project objectives prior to any decision regarding implementation. The means to achieve greater energy conservation is at hand. The principal question is one of priorities.

GENERAL REFERENCES

Abrahamson, Dean E. Environmental Cost of Electric Power. New York: Scientists' Institute for Public Information, 1970.

A Nation of Energy Efficient Buildings by 1990. Washington, D.C.: The American Institute of Architects, February 1975. (Available from Publications Marketing, The American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006, single copies free.)

ASHRAE Handbook and Product Directory. New York: American Society of Heating, Refrigerating and Air Conditioning Engineers. 1976. 800 pages, \$45.00 (Available from ASHRAE Sales Department, 345 East Fourth Street, New York, NY 10017.)

ASHRAE Handbook of Fundamentals. New York: American Society of Heating, Refrigerating and Air Conditioning Engineers. 1972. 688 pages. \$33.00. (Available from ASHRAE Sales Department, 345 East Fourth Street, New York, NY 10017.)

Dahlin, Dennis. Evaluating Energy Conservation in the Environmental Impact Assessment Process. (Readings for course by Continuing Education in City, Regional and Environmental Planning, University extension, University of California.) Berkeley: April 4, 1975.

Ecoview. EIR for the Leasehold of Union Oil Company at the Geysers. Sonoma County, California. Santa Rosa: Sonoma County Planning Department, February, 1975.

Energy and the Built Environment: A Gap in Current Strategies. Washington, D.C.: The American Institute of Architects, May 1974. (Available from Publications Marketing, The American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006, single copies free.)

Energy Conservation, Energy Use and Conservation in Contra Costa County, California. Martinez: Contra Costa County Planning Department, 1976.

Herendeen, Robert A. and Bullard, Clark W., III. Energy Cost of Commerce Goods, 1963 and 1967. Urbana-Champaign: University of Illinois, Center for Advanced Computation, November, 1974.

An important and unique source document needed to calculate the energy required to produce or deliver virtually any product or service.

- Interactive Resources, Inc. Energy Conservation, Analysis and Recommendations for Public Buildings in Contra Costa County, California. Martinez: Contra Costa County Planning Department, May 1976.
- Interactive Resources, Inc. Energy Conservation Guidelines for Evaluating New Development in Contra Costa County, California. Martinez: Contra Costa County Planning Department, May 1976.
- Milne, Murray. Residential Water Conservation. California Water Resources Center Report No. 35. Davis: University of California, March 1976.
- National Clearinghouse for Criminal Justice Planning and Architecture. Energy Conservation Bulletin, Volume 1, Numbers 1 through 28. Urbana: University of Illinois Department of Architecture, December 1973 through May 1974.
- Odum, Howard. Environment, Power and Society. New York: Wiley-Interscience., 1971. \$6.95.
The classic introduction to energetics and energy budgets as they relate to human activities.
- U.S. Congress. House Committee on Science and Astronautics. Conservation and Efficient Use of Energy. Report, 93rd Congress. Washington, D.C.: U.S. Government Printing Office, 1974.

DESIGNING WITH NATURAL HEATING AND COOLING

- Adams, Anthony, Your Energy Efficient House. Charlotte, VT: Garden Way Publishing, 1975. \$4.95, softbound.
Graphic approach to explaining basic ways of using natural heating and cooling forces to make new and existing homes more energy efficient. From the cellar to the roof, the author offers suggestions on how to maximize energy use through design. Remodeling options are also suggested. While the book is elementary and written for the homeowner, it provides pleasant graphic reminders about energy conscious design for architects.

Aho, Arnold J. AIA, Scratchbook: Designing with Natural Energies. 1976. \$12.00. (Available from Arnold J. Aho, P.O. Box 5454, Raleigh, NC 27607.)

A graphics-oriented design book describing and annotating natural energies and the response of materials to these energies. Natural energies, as described by the author, include light, climate, gravity and structure, and corrosion. Materials featured are soils, concrete, masonry, wood and metals. The Scratchbook, with its hand-written, offset printed format, is designed as a flexible resource for architects and architectural students. The book will be updated frequently.

Givoni, B. Man, Climate and Architecture. New York: Elsevier Publishing Company, Ltd., 1969. (Currently out of print.)

Presents a balanced discussion on the physiological, the physical and architectural aspects of the relationship between climate, man and architecture. Major subjects include climatic elements and their effect on man; thermophysical properties of building materials; impact of solar radiation; ventilation problem; and an integrated application of subjects covered for different climatic regions. The emphasis on hot climates reflected in the work is due to the author's long time research work in that area.

Knowles, Ralph L. Energy and Form: An Ecological Approach to Urban Growth. Cambridge: The MIT Press, 1974. \$27.50.

An approach is developed for the planning of regions and settlements as well as for individual buildings to take advantage of natural cycles-in particular, the daily and seasonal rhythms of the sun. This is intended to minimize the need for supportive energy to maintain internal temperatures and other variables at desirable and steady levels. In addition to achieving a better equilibrium with nature, the approach promises a much richer diversity of urban form.

Lee, Douglas, H.K. Physiological Objectives in Hot Weather Housing. Report for Office of International Affairs, Department of Housing and Urban Development. Washington, DC: Department of Housing and Urban Affairs, 1953. Reprinted 1970. (Available from Department of Housing and Urban Development, Office of International Affairs, Washington, DC 20410, single copies free.)

The introduction states that "the purpose of this booklet is to present those principles, the observation of which it is believed would minimize the direct effects of hot environments upon man, insofar as housing and shelter are concerned." Subjects include the physiological effects on man; bioclimatology of tropical and subtropical regions; housing in climates that are hot

dry, warm humid or a combination thereof; and functional considerations in housing. Appendix includes a discussion on the heliodon (machine for casting sun shadows); a discussion on the psychrometric charts; tables of incidence of solar radiation; formulae for determining temperatures of inner walls; and a list of references.

Olgyay, Victor. Design With Climate: Bioclimatic Approach to Architectural Regionalism. Princeton: Princeton University Press, 1963. \$25.00.

A classic work emphasizing the need for regionalized architectural solutions accomplished by scientific analysis and response to climatic conditions. The first part of the work covers concepts and principles including effects of climate on man, comfort and regional evaluation. The second part begins to develop approaches for achieving effective architectural principles. This includes site selection, solar control, wind studies and use of materials. The last part deals with creating design solutions in four climatic regions.

Energy Conservation with Windows. Washington, DC: Federal Energy Administration, 1976. Free. (Available from the Federal Energy Administration, Washington, DC 20461.)

A good summary of the energy-related design considerations for windows. Includes several more detailed and technical references.

Berman, Samuel M., and Silverstein, Seth D. Energy Conservation and Window Systems. A Report of the Summer Study on Technical Aspects of Efficient Energy Utilization under Sponsorship of the American Physical Society, 1975. (Available from the National Technical Information Service, U.S. Department of Commerce, Springfield, CA 22151.)

Proceedings, Conference and Workshop on Passive Solar Heating and Cooling. Los Alamos: Los Alamos Scientific Laboratory, 1976. (Available from National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22151.)

A summary of all presentations at the Conference including theory, technique and case studies.

ENERGY CONSERVATION IN BUILDING DESIGN

AIA Research Corporation. Energy Conservation in Building Design. A Report to the Ford Foundation Energy Policy Project, May 1974: \$5.00.

(Available from Publications Marketing, The American Institute of Architects, 1735 New York Avenue, N.W., Washington, D.C. 20006.)

Discusses design alternatives for reducing energy consumption, primarily in new buildings. Categories include site analysis; building orientation, configuration, and envelope; space planning, transportation within the building; ventilating, heating, cooling; electric power, lighting; domestic hot water; and waste management. Solar and wind are discussed as alternative energy sources. Energy flow diagrams illustrating variable volume and energy integrated systems for heating and cooling cycles are included. Directed to the architect as well as engineer to respond to the energy crisis.

American Institute of Architects. Energy. (AIA Energy Notebook.) Washington, D.C.: American Institute of Architects, September 1975. (AIA Catalog No. PE-200.)

Caudill, William W., et al. A Bucket of Oil: The Humanistic Approach to Building Design for Energy Conservation. Boston: Cahners Books, 1974. \$10.95. (Available from AIA Publications Marketing, 1735 New York Avenue, N.W., Washington, D.C. 20006.)

Calls attention to opportunities and suggests ways for saving energy through building design. Shows how Houston-based architecture-engineering firm of Caudill, Rowlett, Scott have applied the principles presented in the book. Guidelines call for more sensitivity to climatic conditions; frugal use of building materials; task-oriented lighting; designing on edge of comfort zones; efficient HVAC systems; and ample control systems. Advocates performance rather than prescriptive codes.

Design and Evaluation Criteria for Energy Conservation in New Buildings. Washington, D.C.: U.S. Department of Commerce, National Bureau of Standards, February 27, 1974, revised February 26, 1976. (Available from U.S. Department of Commerce, National Bureau of Standards, Washington, D.C. 20234, No. NBSIR 74-452.)

Egan, M. David. Concepts in Thermal Comfort. Englewood Cliffs, NJ: Prentice-Hall, Inc., 1975. \$10.95.

Presents thermal comfort and mechanical system design concepts for buildings in a graphical format. Covers basic theory of building materials; heat loss/gain calculation methods; mechanical systems; and data on mechanical system noise and vibration. Appendices contain useful formulae and tables.

Energy Conservation Design Guidelines for New Office Buildings, 2nd edition. Washington, D.C.: The General Services Administration, July 1975. \$2.00. (Available from GSA Business Service Centers.)

This is an updated version of the initial GSA document entitled Energy Conservation Design Guidelines for Office Buildings. Two useful new sections have been added. One outlines the state-of-the-art on solar energy and the other presents an overview of computer software programs on energy conservation design and analysis. The original energy goals (budgets) have been maintained at 55,000 BTU's/gross square foot/year (input at boundary and 100,000 BTU's/gsf/year (raw source). These figures are now, however, designated in BTU's/equivalent gross square feet/year to account for areas of building requiring energy but not heating and cooling. Numerous guidelines are given for building design, systems and materials selection and building operations. Alternative energy systems and life cycle costing are discussed briefly.

Energy Conservation Guidelines for Existing Office Buildings. Washington, D.C.: U.S. General Services Administration, 1975. (Available from GSA Business Service Centers; Call 202/343-5151 for list of regional centers, \$2.00.)

The applications of this document are far wider than its title suggests. It is a carefully structured and comprehensive checklist of energy conserving design and operational techniques applicable to both existing and new structures.

Griffin C.W. Energy Conservation in Buildings: Techniques for Economic Design. Washington, D.C.: The Construction Specifications Institute, November 1974. \$20.00. (Available from AIA Publications Marketing, 1735 New York Ave., N.W., Washington, D.C. 20006.)

Discusses the economics as well as technical aspects of reducing energy consumption. Cites the financial, political and tax obstacles, and discusses new standards and other energy-conservation measures taken to date. Areas covered are thermal insulation, glass wall design, HVAC; waste-heat reclamation, and architectural techniques for conserving energy. In addition, energy-saving operating procedures, computerized HVAC; control system, lighting and electrical system, and pioneering solar energy applications. Also discussed is the emerging technology of Thermal Energy Storage (TES), and a means of alleviating peak-hour demands on the nation's power utilities. Life-cycle costing is stressed as sound business approach and sane government policy. A brief but informative appendix presents life-cycle concepts and formulae.

Guidelines for Saving Energy in Existing Buildings (Two volumes).

Washington, D.C.: Federal Energy Administration, Office of Energy Conservation and Environment, June 16, 1975. (Available from U.S. Government Printing Office, Washington, D.C. 20402. Volume #FE 1.22:20 is \$5.25; Volume #FE 1.22:21 is \$5.05.)

A valuable pair of "how-to" documents aimed at reducing energy consumption in existing buildings. Volume 1 is a building owners and operators manual. It covers opportunities which require little or no capital investment and focuses largely on operation of mechanical and electrical systems. Volume 2 is intended for engineers, architects, and skilled building operators who are responsible for analyzing, devising and implementing comprehensive energy conservation programs involving more complex measures and higher additional capital costs. Sections in Volume 2 cover 1) An Energy Management Program 2) Detailed Energy Conservation Opportunities 3) Central Control Systems 4) Alternative Energy Sources 5) Cost Estimates and Economics Analysis and 6) Computer Programs. The documents were prepared for FEA by Dubin-Mindell-Bloom Associates, Consulting Engineers.

Hill, James E. and Tamsni Kusuda, "Manchester's New Federal Building: An Energy Conservation Project," ASHRAE Journal, August 1975.

A presentation of the computer energy analysis done by the National Bureau of Standards for the General Services Administration on this energy pilot project. Building design variations and the resultant energy requirements are given for 25 computer runs.

Lighting and Thermal Operations: Energy Management Action Program for Commerical, Public and Industrial Buildings. 2 vols. Washington, D.C.: Federal Energy Administration, 1974. \$2.40. (Available from U.S. Government Printing Office, Washington, D.C. 20402, no order number.)

Olgyay, Victor, and Aladar Olgyay. Solar Control and Shading Devices. Princeton, N.J.: Princeton University Press, 1957. (Presently out of print.)

Covers the underlying principles of shading methods in building design. Theoretical aspects of subject are blended with practical applications. Topics include shading devices as architectural elements; technical considerations of solar protection; and actual examples.

Salter, R.G. and D.N. Morris. Energy Conservation in Public and Commercial Buildings, (P-5093). Santa Monica, CA: Rand Corporation, October, 1973. (Available from Publications Department, Rand Corporation, Santa Monica, CA 90406, single copies free.)

A discussion of the preliminary results of an ongoing study of the use of energy in public and commercial buildings is presented. The effects of building location, design and operation alternatives are developed, together with initial estimates of the conservation potential in the sector. The work is part of Rand's energy conservation work for the National Science Foundation.

Steadman, Phillip. Energy, Environment and Building. A Report to the Academy of Natural Sciences of Philadelphia, Pa. New York: Cambridge University Press, 1975. \$5.95.

A comprehensive survey of methods for the conservation of energy in buildings, and of new sources of energy for building, as well as of ways in which buildings may be designed so as to have a less destructive impact on the natural environment. Subjects include means for energy conservation in otherwise conventionally designed buildings; solar energy and its use for space heating and cooling, for water heating and for the generation of electricity at a building scale through the use of photoelectric cells; the small-scale use of wind and water power; the treatment of building wastes, by composting, and with the production of methane as a fuel, by anaerobic digestion of organic matter; and the conservation of water in buildings. Sets out the basic physical and biological principles involved, but without assuming special technical knowledge on the part of the reader. Shows how these principles can be applied in building design, with illustrations drawn from actual projects.

Technical Options for Energy Conservation in Buildings. Washington, D.C.: U.S. Department of Commerce, National Bureau of Standards, July 1973, \$2.35. (Available from U.S. Government Printing Office, No. C13.46:789.)

Provides reference material on the technical options for energy conservation in buildings. Lists improvements that can be applied to both existing and new buildings. Applies to commercial institutions as well as residential buildings. Regarding existing buildings: principal topics include summer cooling, winter heating, and other energy-conserving features, i.e., insulation; fenestration, lighting, appliances, domestic hot water, and human comfort. Suggested actions include those which can be accomplished voluntarily or without expense, and also actions which require some modest actions are described that deal with building design and mechanical systems. The report concludes with a summary of mechanisms for implementation of these actions and criterion for use in evaluation of them.

ENERGY CODES AND STANDARDS

American Institute of Architects. A Guide for Architects for the Determination and Use of Annual Energy Budgets Related to the Design and Operation of Buildings (Draft). Washington, D.C. The American Institute of Architects, September 1976.

ASHRAE Standard 90-75: Energy Conservation in New Building Design. New York: American Society of Heating, Refrigerating, and Air-Conditioning Engineers, Inc., 1975.

Establishes requirements and criteria directed toward the design of building envelopes with high thermal resistance, low air leakage, and improved design of mechanical and electrical systems. A three-path approach is used. The initial path establishes a set of mandatory requirements for the building envelope, HVAC equipment, HVAC system design, service water heating, electrical distribution and lighting. Alternative designs are allowed under two alternative paths on systems analysis and solar/wind energy sources. The alternative designs are allowed only if they can be shown to require less energy than the mandatory requirements.

Energy Conservation Design Manual. First Staff Draft. Sacramento: California Energy Resources Conservation and Development Commission, September 9, 1976.

An implementation document for the proposed Title 24 Energy Conservation Standards for new non-residential buildings.

Energy Conservation Standards for New Non-Residential Buildings, Final Staff Report, (Title 24, Building Standards; Part 6, Special Building Regulations; Division T20, Public Utilities and Energy; Chapter 2, State Energy Resources Conservation and Development Commission; Article 4, Regulations for Energy Conservation.) Sacramento: State of California Energy Resources Conservation and Development Commission, February 6, 1976.

IMPACT REVIEW OF ENERGY CODES AND STANDARDS

Arthur D. Little, Inc. Energy Conservation in New Building Design, An Impact Assessment of ASHRAE Standard 90-75. Conservation and Environment Buildings Program, Conservation Paper No. 433. Washington, D.C.: U.S. Government Printing Office, 1976.

Bridges, Dennis R. Architectural Flexibility Within Title 24 Energy Regulations. San Francisco: Presentation at the San Francisco Golden Gate Chapter of ASHRAE, December 2, 1976.

Hugh Carter Engineering Corporation. Non-Residential Energy Conservation Standards, Title 24, Economic and Energy Effectiveness Study. Sacramento: State of California Energy Resources Conservation and Development Commission, November 5, 1975.

Mitchell, J.W., et al. Implications of Commercial Building Codes for Energy Conservation. Washington, D.C.: NTIS. December, 1974, No. PB-245 965.

ENERGY CONSERVATION OPPORTUNITIES IN LANDSCAPING

Dahlin, Dennis. The Greedy Lawn, Berkeley, CA: by the author, 1975.

Deering, R.B. "Effective Use of Living Shade." California Agriculture, September, 1955, p. 10.

Deering, R.B. and Brooks, F.A. "Landscaping for Summer Shade." California Agriculture. 7(5). 11,16, 1953.

Neubauer, L.W. House Comfort in Hot Weather, Preliminary Report on Orientation and Shading. Davis, CA: University of California Department of Agricultural Engineering, January 27, 1956.

Neubauer, L.W. House Cooling in a Warm Dry Climate. Davis, CA: University of California Department of Agricultural Engineering, October 20, 1955.

Robinette, Gary O. Plants/People/and Environmental Quality. Washington, DC: National Park Service, U.S. Department of the Interior in collaboration with the American Society of Landscape Architects Foundation, 1972. \$4.35. (Available from U.S. Government Printing Office, Washington, DC 20402, Order No. 129.2.)

Graphically refreshing, this study of plants and their environmental functions has an informative section on how plants can be used to provide human comfort, both inside and outside a building, under various climatic conditions. Controlling glare and reflection, solar radiation, temperature and wind are some of the ways that a functional use of plants relates to energy use.

ECONOMICS OF ENERGY CONSERVATION AND LIFE CYCLE COSTING

Ackerman, Allan D., et al. (ABT Associates, Inc.) Cost Effective Methods to Reduce the Heating and Cooling Energy Requirements of Existing Single Family Residences. Washington, DC: HUD Office of Policy Technology and Safety, February 1975. \$7.00. (Available from National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22151, Report No. PB241919.)

Appendix A of this study provides a clear and simple explanation of life-cycle costing theories and procedures.

Brown, Richard S., and Shachmut, Kenneth M. Economic Analysis Handbook. Alexandria: Naval Facilities Engineering Command HQ, June 1975. \$8.50. (Available from National Technical Information Service, U.S. Department of Commerce, Springfield, VA 22151, Order No. AD-A020 859.)

A good explanation of life-cycle costing techniques, this manual characterizes economic analysis of U.S. government capital investment proposals as a formal process consisting of six steps. Explains the origin of the 10 percent discount rate prescribed for analysis of government proposals. Develops basic economic analysis techniques, including the computation of net-present-value costs, savings/investment ratios, discounted payback periods, and equivalent uniform annual costs. Discusses cost analysis, benefit analysis, and uncertainty analysis (sensitivity analysis). Contains a detailed discussion of the treatment of inflation. Discussions are liberally supplemented by examples; most examples are in the context of military construction which is the Handbook's main area of emphasis.

Ruegg, Rosalie T. "Life-Cycle Costs and Solar Energy." ASHRAE Journal. November 1976. pp. 22-25.

Ruegg, Rosalie T. Solar Heating and Cooling in Buildings: Methods of Economic Evaluation. Washington, D.C.: U.S. Department of Commerce, National Bureau of Standards (COM-75-11070 and NBSIR 75-712), July 1975.

CLIMATE

Goodridge, James D. Solar Radiation Measurements in California. Sacramento: State of California Resources Agency, Department of Water Resources, Division of Resources Development. 21 pages. Free.

A recent summary of the broadly scattered solar radiation data in California.

U.S. Department of Commerce. Climatography of the United States No. 81 (by State), Monthly Normals of Temperature, Precipitation and Heating and Cooling Degree Days, 1941-70 - California. \$.25 per state. (Available from National Climatic Center, Federal Building, Ashville, NC. Check/money order made payable to "Commerce, NOAA.")

One of the most complete sources of long-term weather data that is readily available.

Pacific Gas and Electric Company. Mean Hourly Temperatures-for Northern and Central California. San Francisco, PG&E, 1967.

Recommended Outdoor Design Temperatures - Northern California. (Second edition.) 6 pages. \$2.00. (Available from Golden Gate Chapter, ASHRAE, Eugene Valerio, P.O. Box 2787, South San Francisco, CA 94080.)

A useful source of weather data statistics for Northern California summer and winter design criteria.

Energy Design Manual for Residential Buildings. Sacramento: State of California. Department of Housing and Community Development, Division of Codes and Standards. 197 pages. \$2.00.

ENERGY CONSERVATION AND BUILDING OPERATION

Berg, C. A. Conservation Via Effective Use of Energy at the Point of Consumption (NBSIR 73-202). Washington, DC: National Bureau of Standards, April 1973. (Available from Office of Energy Conservation, NBS, Washington, DC 20234.)

Methods of conserving energy at the point of consumption are explored. Some examples of opportunities for improving effectiveness of energy consumption in buildings are discussed under three general areas: design (including insulation, fenestration, selection of heating and ventilating equipment, etc.); construction practices in implementing design; and occupant practices in using buildings. Industrial energy consumption has not been studied thoroughly. Many fairly simple measures, such as plugging leaks in air and steam lines and furnishing steam at the required temperatures and pressures, could result in considerable energy conservation. Data are cited to support the belief that the practices and equipment used in various industries could be substantially improved to conserve energy, and in many cases the improvements would be economically justified. Additional information on ways to conserve energy coupled with more effective technology of materials and machinery should result in substantial energy savings in both the residential and industrial sectors.

Department of Commerce. How to Start an Energy Management Program.
Washington, DC: U. S. Government Printing Office, 1973.

Energy Conservation Guidelines for Building Operations. Washington, DC:
General Services Administration, Public Buildings Service, 1976. \$2.00.
(Available from GSA Business Service Centers; call 202/343-5151 for list
of regional centers.)

This 78-page manual is specifically directed toward building managers
and their staffs. Contains a checklist of practical energy-saving suggestions
in building operations and maintenance.

Gatts, Robert R.; Massey, Robert G.; and Robertson, John C. Energy Conservation
Program Guide for Industry and Commerce (EPIC). Washington, DC: Institute
for Applied Technology, National Bureau of Standards, U. S. Department of
Commerce, September 1974.

Southern California Gas Company. How to Save Energy in Commercial Buildings.
Los Angeles: Southern California Gas Company.

Spielvogel, Lawrence G. "Exploding Some Myths About Building Energy Use,"
Architectural Record, February 1976, pp. 125-28.

The Institute of Real Estate Management. Energy Conservation Recommendations.
Chicago: The Institute of Real Estate Management, December 1975.

GLOSSARY OF TERMS AND UNITS OF ENERGY

GLOSSARY OF TERMS

Cooling Degree Days. A measure of annual cooling needs based on time plus the difference between the mean daily outdoor temperature and 65 degrees Farenheit. Example: 75 F mean temperature - 65 F = 10 Cooling Degree Days for that day.

Energy Efficiency Ratio. (EER). The ratio in BTU's output to total input in watts. The higher the ratio, the more efficient the unit.

Glazing. Glass wall areas. May be openable or not.

Heat Gain. Capacity of materials to transmit heat to building interior.

Heat Loss. Capacity of materials to transmit heat to building exterior.

Heating Degree Days. A measure of annual heating needs based on time plus the difference between 65 degrees Farenheit and the mean daily temperature. Example: 65 F - 55 F = 10 Heating Degree Days for that day.

HVAC. Heating ventilating and air conditioning systems within or associated with a building.

Peak Demand. A daily or annual high use period. For electricity the seasonal peak demand occurs during the summer when air conditioning is used, and daily during the 5 to 7 p.m. period when home energy use is at its highest.

Pilotless Ignition. Same as Intermittant Ignition device. Any ignition system on a gas appliance which is not a continuously burning gas pilot light.

Retrofit. Supply with new equipment, parts, or features after completion of building construction.

Temperature Inversion. An atmospheric condition in which warmer air lies above cooler air. This condition occurs in the Bay Area approximately two days out of three, and at elevations of 1,500 to 3,000 feet. Prevailing winds continue above the inversion but are inhibited beneath it.

UNITS OF ENERGY

1 joule (j) - energy required to lift 1 kilogram 10.2 centimeters (4 inches)

1 watt (w) - 1 joule per second

kilowatt (kw) - 1000 watts

kilowatt hour (kwh) - 1000 watts for 1 hour. A measure of accumulated energy usage. Equals 3,412 BTU - 860 Kcal

BTU - British Thermal Unit. The energy required to raise 1 pound of water from 59 degrees F to 60 degrees F. Equals 252 calories - 0.252 kcal.

Therm - A heat value measure of gas equivalent to 100,000 BTU

Kilocalories (kcal) - The amount of heat required to raise the temperature of one kilogram of water one degree Celsius

Barrel of Crude Oil (Bbl.) - 42 gallons. Equals 5,800,000 BTU = 23,015,873 kcal

Chapter 16

TRAFFIC AND PARKING

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

JHK & Associates
San Francisco, California
January, 1977

TABLE OF CONTENTS

	<u>Page</u>
1. INTRODUCTION	16-1
2. SCOPE OF SERVICE	16-2
Base Conditions	16-2
Forecast Conditions	16-2
Alternatives and Mitigation Measures	16-4
Constraints	16-5
3. STUDY METHODOLOGY	16-7
Existing Conditions	16-7
Circulation and Access System	16-7
Traffic Volumes	17-8
Vehicle Miles of Travel	16-9
Parking	16-12
Congestion and Delay	16-15
Future Conditions	16-16
Background Traffic Volumes and Parking Demand	16-17
Proposed Detention Facility	16-18
Facility Generated Traffic	16-20
Detention Facility Induced Traffic Patterns	16-21
Construction Traffic	16-21
Other Traffic Generating Activities	16-21
4. STUDY FINDINGS AND CONCLUSIONS	16-23
Existing Conditions	16-23
Circulation and Access Systems	16-23
Traffic Volumes	16-26
Vehicle Miles of Travel	16-40
Parking	16-40
Congestion and Delay	16-47
Future Conditions	16-49
Circulation and Access Systems	16-49
Traffic Volumes	16-52
Vehicle Miles of Travel	16-73
Parking	16-74
Congestion and Delay	16-77
5. ALTERNATIVES AND MITIGATION MEASURES	16-80
Alternative Project Proposals	16-80
Alternative Access Proposals	16-80
Mitigation Measures	16-82
Traffic and Parking Demand	16-82
Peak Hour Demand	16-83
Parking Supply Adjustments	16-84

	<u>Page</u>
Construction Traffic and Parking	16-85
SUMMARY OF IMPACTS AND MITIGATION MEASURES	16-87
Circulation and Access Systems	16-87
Traffic Volumes	16-87
Vehicle Miles of Travel	16-89
Parking	16-89
Congestion and Delay	16-90

LIST OF FIGURES

<u>Figure</u>		<u>Page</u>
3- 1	1976 Traffic Count Locations	16-10
3- 2	VMT Impact Estimation Area	16-11
3- 3	Parking Study Area Limits	16-14
4- 1	1976 Weekday Traffic Volumes	16-27
4- 2	1976 Weekday Traffic Volumes	16-28
4- 3	1976 A.M. Peak Hour Volumes	16-29
4- 4	1976 A.M. Peak Hour Volumes	16-30
4- 5	1976 P.M. Peak Hour Volumes	16-31
4- 6	1976 P.M. Peak Hour Volumes	16-32
4- 7	Hourly Traffic Volume Variation at Selected Locations	16-34
4- 8	Hourly Traffic Volume Variation at Selected Locations	16-35
4- 9	1976 A.M. Peak Hour Pedestrians	16-36
4-10	1976 Noon Hour Pedestrians	16-37
4-11	1976 P.M. Peak Hour Pedestrians	16-38
4-12	Average Auto Occupancy	16-39
4-13	1976 Parking Distribution	16-41
4-14	Core Area Parking Utilization	16-43
4-15	Periphery Area Parking Utilization	16-44
4-16	Daily Variation in Mid-Morning Utilization	16-45
4-17	1980 No Project Daily Volumes	16-53
4-18	1980 No Project Daily Volumes	16-54
4-19	1980 No Project P.M. Peak Hour Volumes	16-55
4-20	1980 No Project P.M. Peak Hour Volumes	16-56
4-21	1980 Alternates A, B, & C Daily Volumes	16-60
4-22	1980 Alternate A Daily Volumes	16-61
4-23	1980 Alternate B Daily Volumes	16-62
4-24	1980 Alternate C Daily Volumes	16-63

<u>Figure</u>		<u>Page</u>
4-25	1980 Alternates D & E Daily Volumes	16-64
4-26	1980 Alternate D Daily Volumes	16-65
4-27	1980 Alternate E Daily Volume	16-66
4-28	1980 Alternates A, B, & C P.M. Peak Volumes	16-67
4-29	1980 Alternates A & B P.M. Peak Volumes	16-68
4-30	1980 Alternate C P.M. Peak Volume	16-69
4-31	1980 Alternates D & E P.M. Peak Volume	16-70
4-32	1980 Alternates D & E P.M. Peak Volume	16-71

LIST OF TABLES

<u>Table</u>		<u>Page</u>
3-1	Percent Change in Traffic Volumes 1974-1976	16-13
4-1	Detention Facility Weekday Trip Generation Summary	16-58
4-2	Summary of Parking Supply Impacts	16-76
6-1	Summary Ranking of Detention Facility Alternates	16-88

1. INTRODUCTION

Contra Costa County is currently planning the construction of a new Criminal Justice Detention Facility for the County Civic Center area in Martinez. The proposed project encompasses a 380 inmate detention center, two courts (Superior and Municipal) and new parking lots. A four-court addition to house new Superior courts will be constructed adjacent to the Facility at a later time. The Facility will be located approximately two blocks south of the existing Courthouse and County Administration Building. Under the California Environmental Quality Act a project of this magnitude requires the preparation and filing of an environmental impact report (EIR) prior to its construction. This Special Subject Report presents an analysis of current and future traffic and parking conditions in the Civic Center area for the use of County staff in preparing an EIR for the Detention Facility project.

In addition to the concern with the Detention Facility project, the County is interested in developing information on current and potential traffic circulation and parking problems or opportunities in the general Civic Center area. The Detention Facility is only one element of the proposed Civic Center development that is currently part of the Civic Center master plan. While the plan is outdated it provides an overall framework for consideration of potential Civic Center activity. The traffic information being developed with respect to the Detention Facility project may be used in analyzing potential problems associated with other development in the Civic Center area.

The Contra Costa County Planning Department engaged the firm of JHK and Associates (JHK) to conduct the traffic study in the Civic Center area. JHK is a national consulting engineering and planning firm specializing in traffic and transportation. They are familiar with the Civic Center area through their involvement in the Contra Costa County Land Use and Transportation Study and their preparation of the traffic study for the previous Detention Facility proposal of 1974.¹

The scope of services provided the County by JHK are described in detail in the following chapter.* Subsequent chapters of this report discuss the study methodology; the findings and conclusions of JHK with respect to potential traffic and parking impacts in the Civic Center area; and alternative traffic and parking facilities or possible mitigation measures to lessen the effect of any impacts identified. A summary of key findings with respect to impacts, alternatives and possible mitigation measures is presented in Chapter 6.

¹JHK & Associates "Traffic Circulation Impact of the Proposed Contra Costa County Detention Facility", Appendix B to the Draft Environmental Impact Report, Contra Costa County, California, Criminal Justice Detention Facility, January, 1975.

*Editor's note: In this Traffic and Parking study, the term "chapter" refers to its internal divisions, or parts, not to the chapters of Background Report.

2. SCOPE OF SERVICES

The scope of services provided to the County by JHK focused on the development of information in four areas:

- . Existing (1976) parking demand, traffic volumes and travel patterns in the Civic Center area.
- . Forecast parking demand and traffic volumes for a 1980 horizon year.
- . Estimated traffic and parking demand generated by the proposed project.
- . Measures to mitigate adverse traffic and parking effects identified with the Civic Center area generally or with respect to the Detention Facility project particularly.

The study was conducted on a two-level basis. The first was concerned with the overall Civic Center in terms of its parking demand and anticipated growth in the next four years independent of the Detention Facility. The second level focused on individual Detention Facility impacts as related by each of the five alternatives considered. The information developed with respect to the first level will be pertinent to the evaluation of other programs or projects in the Civic Center area.

With respect to the Civic Center area and the surrounding environs the following assumptions have been made for the purposes of this study. In the near-term it is unlikely that the nature of the residential community east and south of the Civic Center or of the commercial center in the downtown west of the Civic Center will vary. In this instance, near-term is taken to be the next four years. The City is adamant in protecting the single-family residential nature of the hillside area. In addition, historical information in the downtown area shows it to be a stable area with little change in total number of establishments, although there is some turnover.

The major change in the area which may occur in the near-term is the construction of the Waterfront Park and enlarged marina. The potential effect of the proposed park with respect to the traffic and parking in the Civic Center area is described in the appropriate sections of the report. This project, however, is relatively undefined in terms of its staging and it may be many years before the total plan is completed. The information to be developed with respect to base and forecast years is elaborated further below.

BASE CONDITIONS

Base conditions pertain to the present year (1976). Information on base condition was developed for circulation and parking

facilities, traffic volumes, parking demand, and vehicle miles of travel. This assessment of current status of the parking and traffic in the Civic Center area provides background data for the analysis of the Civic Center in general and the particular effects of the proposed Detention Facility project. Analysis of the base condition allows the incremental change that can be tolerated within accepted operational limits to be identified. In comparing the information from two years ago it is possible to examine the short-term trends. These are useful for preparing forecasts for the 1980 forecast year.

Facility data with respect to streets and highways and parking was summarized by JHK from previous studies, aerial photography obtained by the County in March 1975, and field surveys by JHK personnel. Transit system data was obtained from operators. At the request of JHK, the County performed a series of machine traffic counts on streets in the Civic Center area and on the major arterials leading into the central Martinez area. JHK undertook extensive field surveys involving turning movement counts at intersections in the central area and vehicle occupancy and vehicle classification counts on the major arterials. Data on parking demand was developed from field surveys by JHK.

Based on the data and observations described above, the current operating characteristics, system capacity and system reserves were identified. These provide the basis for analysis of any incremental change in traffic volume or parking demand in the Civic Center area. Vehicle miles of travel (VMT) estimates were updated from the previous work done two years ago.

FORECAST CONDITIONS

Forecast conditions were developed for two basic cases. The first case is the general Civic Center area, what could be termed the no project alternative. This defines the traffic and parking setting within which the Detention Facility will function. The second case pertains to the Detention Facility and is related to the level of activity which can be expected to occur under the various alternatives. The first case analysis is common to all Detention Facility alternatives. The Detention Facility itself has some attributes which are common to all alternatives and some which vary between alternatives.

The forecast year chosen is 1980. This year was chosen to represent the period when the Detention Facility could be assumed to be at full operating level (380 inmates). Based on trends in general County growth and changes in traffic volumes in the Civic Center area, the traffic volume and parking demands identified as the base condition were increased to represent the year 1980. The effect of other factors outside the Civic Center area which may have an incremental effect on 1980 traffic were also considered. At the present time this is limited to the construction of the Waterfront Park. With respect to the circulation and parking

facilities themselves there are no proposed changes in circulation or parking in the Civic Center area which are not associated with a particular Detention Facility alternative.

Traffic generation and traffic demand associated with the alternative Detention Facilities were based on estimates of person trip generation developed for the County by Facility Sciences Corporation.² The overall level of traffic demand and parking needs for the facility is constant between each alternative. This is due to the fact that the total number of inmates and the amount of activity associated with the court annex does not vary between the alternatives. The differences between alternatives are in the amount and location of parking and the various changes in the street circulation patterns. Thus there are three types of forecasts that are made as part of the study:

- . Civic Center growth independent of the new Detention Facility.
- . An increment of growth in Civic Center activity that may be attributed to the Detention Facility and court annex facilities.
- . Changes in traffic circulation and parking based on relocation of parking facilities, the amount of parking provided and changes in the street system in the Civic Center area.

The first two are constant for any alternative. The differences in alternatives with respect to the proposed project are only apparent in considering the third type of forecast.

Estimates of parking demand were also developed for the interim years and 1980. This is to allow for the analysis of the effect of the construction project itself on circulation and access in the Civic Center area. Construction of the facility will require closure of presently occupied parking areas. At the same time there will be an increment of activity generated by the construction activity related to the number of employees and material deliveries. Depending on staging of various processes in the construction program and the final site selected for construction, the interim effects may in fact be greater than those associated with the completed project. These interim effects also tend to vary between project alternatives.

ALTERNATIVES AND MITIGATION MEASURES

Based on analysis of current reserves and forecast activity levels the impact associated with the project itself and with the general growth of activity in the Civic Center area were assessed. Differences in impact between the five defined alternatives

²Facility Sciences Corporation, Detention Facility Service Program, Beverly Hills, California, November 1976 (draft).

considered here may be addressed with some certainty since each project alternative is well defined. Analysis of variation and impacts with more hypothetical alternatives becomes difficult due to the lack of definition involved. The effect of an alternative on the Civic Center area may be considered in the context of a reduction in level of effect associated with one of the proposed project alternatives. However, for areas away from the Civic Center the impact of an alternative may not be addressed with any certainty. Therefore, the consideration of alternatives outside the Civic Center cannot be at the same level of detail as those which are contained within the defined area.

Suggested alternatives and mitigation measures to alleviate impacts identified with this particular project are not necessarily considered at the same level of detail as the project or as each other. Nor are all alternative or mitigation measures of equal feasibility. What has been done with respect to alternatives is the development and identification of those alternatives which are considered to have the best potential for alleviating impacts in the Civic Center area. Mitigation measures and alternatives with the best potential beneficial effect have been identified. To a certain extent this is a qualitative analysis since in many cases assumptions about the County's ability to implement alternatives have to be made. Whether or not certain alternatives are feasible may revolve around considerations of both County policy and ultimate County goals for the Civic Center area. In some instances alternatives or mitigation measures may be incompatible with each other. Where this is a possible factor such incompatibilities are identified.

CONSTRAINTS

The services provided as part of the study are constrained by a number of factors pertinent to the particular nature of the proposed project and the manner in which the project is being pursued. In this respect it is of note that this project itself is still in the process of being defined. The information upon which the analysis presented in this study was based was the best available at the time the study was prepared. It should be understood however, that there are many variables that have yet to be determined with respect to the actual composition of the proposed project. As appropriate, JHK has made conservative estimates in those areas where a range of values may be indicated.

A further constraint is that this quantitative analysis only pertains to the construction of the Detention Facility in the Martinez Civic Center area. Alternatives that incorporate placing the facility in a location outside the Civic Center or in providing a smaller or larger facility than the 380 inmate project currently proposed are not addressed in this study. A short discussion of the project history leading to the five current alternatives is contained in Chapter 3. Some general considerations related to transportation or parking for a larger or smaller facility or if the facility is not located at a downtown area but at an outlying

site are considered in the chapter on alternatives (Chapter 5). Due to the undefined nature of these alternatives the analysis is qualitative only.

Other uncertainties exist with respect to the future Civic Center expansion. The current proposed Detention Facility consumes all previously defined land in the Civic Center area as indicated in the plan of 1963.^{3,4} Further development of the Civic Center area involves either more dense development in the Civic Center area or expansion beyond these previously defined boundaries. This is further affected by the current trend to decentralization of County services. This decentralization is occurring both in Martinez with respect to the shift of office space from commercial to County functions, and with the placing of many County services, particularly those dealing directly with persons such as social services, into the local communities.

The extension of County functions westward from the Civic Center into the downtown Martinez commercial area is also affecting the apparent patterns of Civic Center versus downtown parking and traffic demand. There is a lack of definition with respect to the interaction between the Civic Center and the downtown since in effect there is no clear boundary between the two functions. On the whole this study has considered Court Street, including the west side, to be the limit of what is to be considered the Civic Center core area. West of Court Street the multiplicity of activities in the downtown area make it difficult to indicate which parking and traffic demands may be related to County functions.

The Civic Center master plan of 1963 is out of date. Whether or not the Detention Facility is constructed on one of the presently proposed sites, the County should pursue a redefinition of the Civic Center area with respect to its function and the activities that are anticipated to be located there. The ad hoc nature of County facility growth and expansion in the Martinez area has been detrimental with respect to both the County's relation to the surrounding community and to the furtherment of a cohesive planning effort.

³Frederick L. Confer & Associates, Ruth & Krushkhov, The Contra Costa County Civic Center Plan, Martinez, California, 1963 (unpublished).

⁴Wilbur Smith & Associates, Contra Costa County Civic Center: Traffic and Parking Study, San Francisco, California, 1964.

3. STUDY METHODOLOGY

This chapter of the report describes the techniques and processes used in data gathering, analysis, and preparation of estimates and projections. The study techniques and assumptions employed are described below under various information area headings. The results and findings of the study effort are described in Chapter 4.

EXISTING CONDITIONS

Analysis of the existing conditions (1976) is based on extensive survey of traffic volumes and parking in the Civic Center area. This analysis defines the base level against which the potential impacts of general growth in the Civic Center area and those impacts specifically associated with the Detention Facility project may be estimated. The base condition analysis also provides information on traffic and parking patterns which may be extrapolated to the future years. Comparison of current traffic and parking demand with information derived in 1974 also provides a check on short-term trends. These are useful in estimating the extent of background growth (growth independent of the Detention Facility) that will occur in the Civic Center by the year 1980. Data collection techniques and analysis procedures for the various data components are described in further detail under the headings below.

Circulation and Access Systems

The circulation and access systems are the street and transit systems which currently serve the Civic Center area. Certain streets were selected for inclusion in the data gathering effort and for later impact assessment based on their proximity to the Civic Center area and their role in area-wide circulation. Identification of streets to be included was based on current traffic volumes and traffic patterns, the location of existing and future parking areas and the relative importance of the various streets with respect to access between the Civic Center and the communities outside Martinez. The streets in the vicinity of the Civic Center area for which traffic counts were made and future assignments developed are bounded by Mellus Street, Marina Vista, Willow Street, and Ferry Street.

In addition to these streets in the immediate vicinity of the Civic Center area the three major arterials providing access to the Martinez area were also included. These are Alhambra Avenue (with Berrellessa Street), Pacheco Boulevard, and Marina Vista. While other streets may be affected by Civic Center oriented traffic both the current traffic volume and the anticipated impact were too low to allow for any accurate determination to be made. Streets in this category would include Grandview Avenue, Henrietta Street, Susana Street and other local access streets serving the hillside area. On the west side of the Civic Center the discontinuities in the street grid restrict Civic Center traffic to the streets

previously mentioned.

Analysis of traffic volumes and flow patterns was augmented by field observations and discussions with County and City staff. Of particular interest were specific proposals that are presently before either body to modify the existing street pattern in the Civic Center area. At the present time no specific plans other than those prepared as part of the Detention Facility project have been proposed. There is a possibility that the construction of the Waterfront Park may require or provide access across the Southern Pacific railroad tracks in addition to the existing crossing at Ferry Street. No specific plans are presently available, however.

Information on current transit service was obtained from the service providers, Greyhound and AC Transit. AC Transit operates the BART express bus service under contract to that agency. There are no other public transit entities operating in the area. There are no plans at the present time to expand or augment the current public transit service beyond that which may be inaugurated to complement expansion in BART service hours. Martinez is served by two private taxicab operators. As the transit operators are primarily in line-haul long distance type of operation most local service is provided by the taxicab operators.

Traffic Volumes

Traffic volume data was collected by a number of means for particular purposes. At the direction of JHK the County Public Works Department obtained twenty machine counts on various streets in the Civic Center area and on the outlying arterials. These machine counts provide traffic volume data on an hourly basis over twenty-four hour periods and identify the peak hours by fifteen minute clock intervals. The locations to be counted were selected to include those areas where machine counts were made in 1974. This allows analysis of trend growth in the intervening two years to be made.

Manual traffic counts were performed to develop three types of information. These were vehicle turning movement counts, vehicle occupancy counts, and vehicle classification counts. The turning movement counts were made at nineteen intersections in the Civic Center area. As well as counting vehicles making each individual turning movement, pedestrian crossing volumes were also counted as part of this program. Turning movement counts were performed for the three periods during the day when traffic volumes were at the maximum. These count periods were identified from the twenty-four hour records developed in the machine count program. Periods counted were 7:30-9:00 A.M., 11:30 A.M.-1:30 P.M., and 3:30-5:30 P.M.

Vehicle occupancy and vehicle classification counts were made at three locations. These were on Alhambra Avenue and on Berrellessa Street, both at Green Street and on Marina Vista east of Escobar Street. The vehicle occupancy and classification counts were taken for the periods 7:00-9:30 A.M., 11:00 A.M.-2:00 P.M., and

3:00-6:00 P.M. In all 180 man-hours were expended in manual traffic counts, exclusive of time in supervision and training. Locations of traffic counts are shown on Figure 3-1.

The machine traffic count summaries are maintained in the County Traffic Engineer's Office in Martinez. Summaries of the turning movement counts have been supplied to the County Planning Department and are maintained by them. Summaries and abstracts from the base data are presented in Chapter 4 of this report.

Vehicle Miles of Travel

The derivation of the total daily vehicle miles of travel (VMT) estimated in 1974 was examined as part of this study. The estimate prepared at that time is considered to be still valid for the area described in the 1974 report as the "outer impact boundary area". This area is approximately bounded by the western city limits of Martinez, at least to the limits of the developed area below the west ridge line; State Highway 4 along the south side of the area to Howe Road; Howe Road north to Pacheco Boulevard and the Shell Oil property; then along the southern and western boundary of the Shell Oil property along the ridge above the East Hillside Neighborhood area. The impact area is shown on Figure 3-2.

The VMT estimate prepared in 1974 considered two street classifications; major streets where volume data is available or where reasonable estimates of average data traffic can be made, and minor streets which serve as residential or minor collectors and where traffic volumes are not known but where reasonable expected volumes based on the fronting land use can be assigned. The vehicle mile contribution of each street was approximated by the product of the street length and an average daily traffic volume representative of the street length. Approximately 23 major street sections were identified and it was determined that the vehicle mile contribution of these major streets amounted to approximately 70% of the daily vehicle mile total estimate. The overall travel figure estimated for 1974 was 110,000 vehicle miles of travel within the outer impact boundary. As the method was rather qualitative the probable error is on the order of plus or minus 25,000 miles.

The twenty-four hour traffic volumes derived from the machine counts developed as part of the current study indicated little change in average daily traffic volumes in the last two years. Some count stations were up, some were down, there was no consistent pattern with respect to the twenty-four hour volumes. Pine Street, for example, was down by 7%, while Alhambra Avenue was up by approximately 5%. The greatest change was on Marina Vista west of Shell Avenue where the most recent count was 35% below that of the one made in 1974. Immediately west of Pine Street however, Marina Vista was up over 1974 volumes. In all it is felt that the lack of a definitive pattern in the comparison of daily traffic volumes indicates relatively little change since 1974. Most of the volume differences could be attributed to the random type of variation which occurs on a day-to-day or monthly basis. A

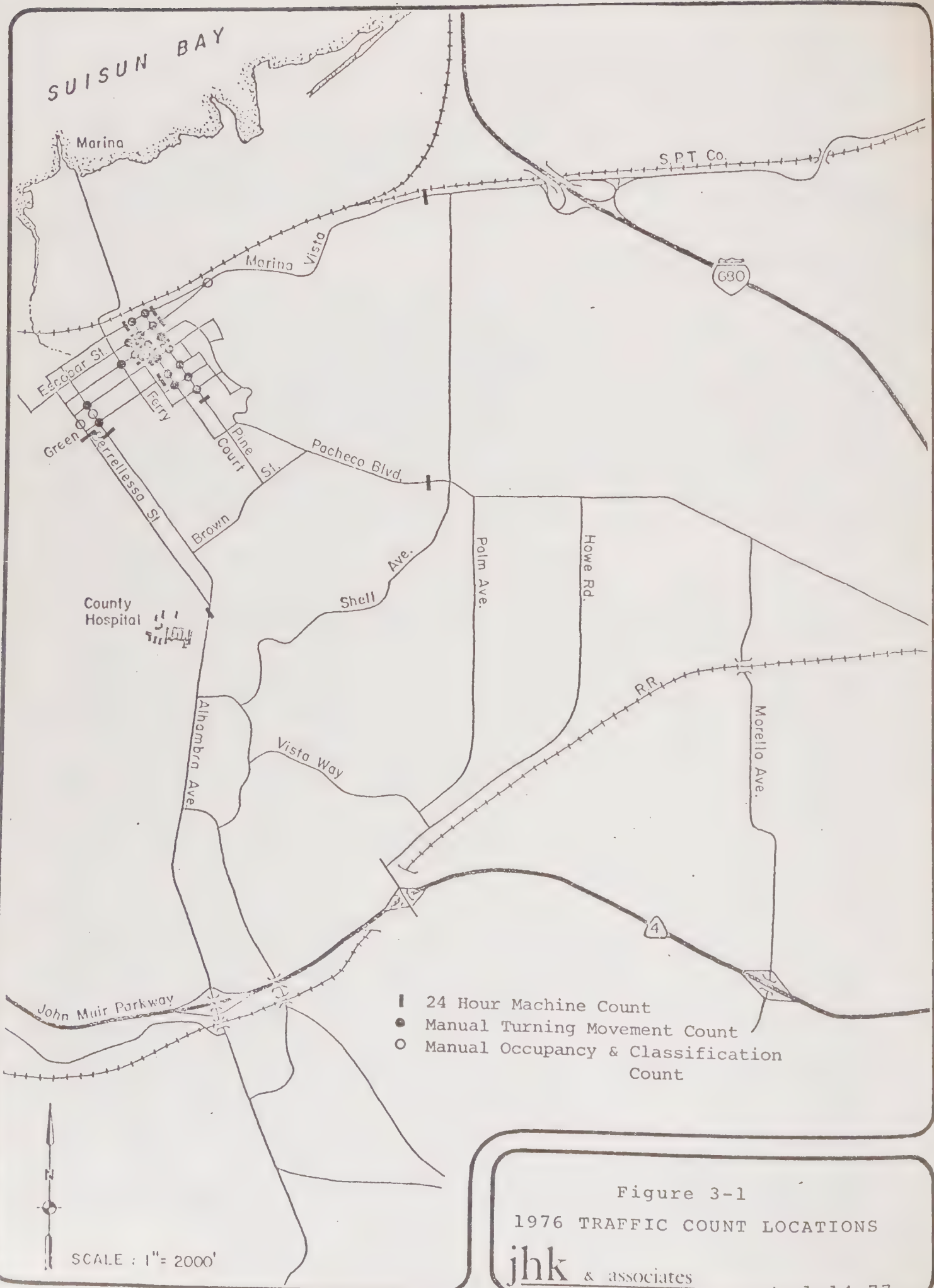
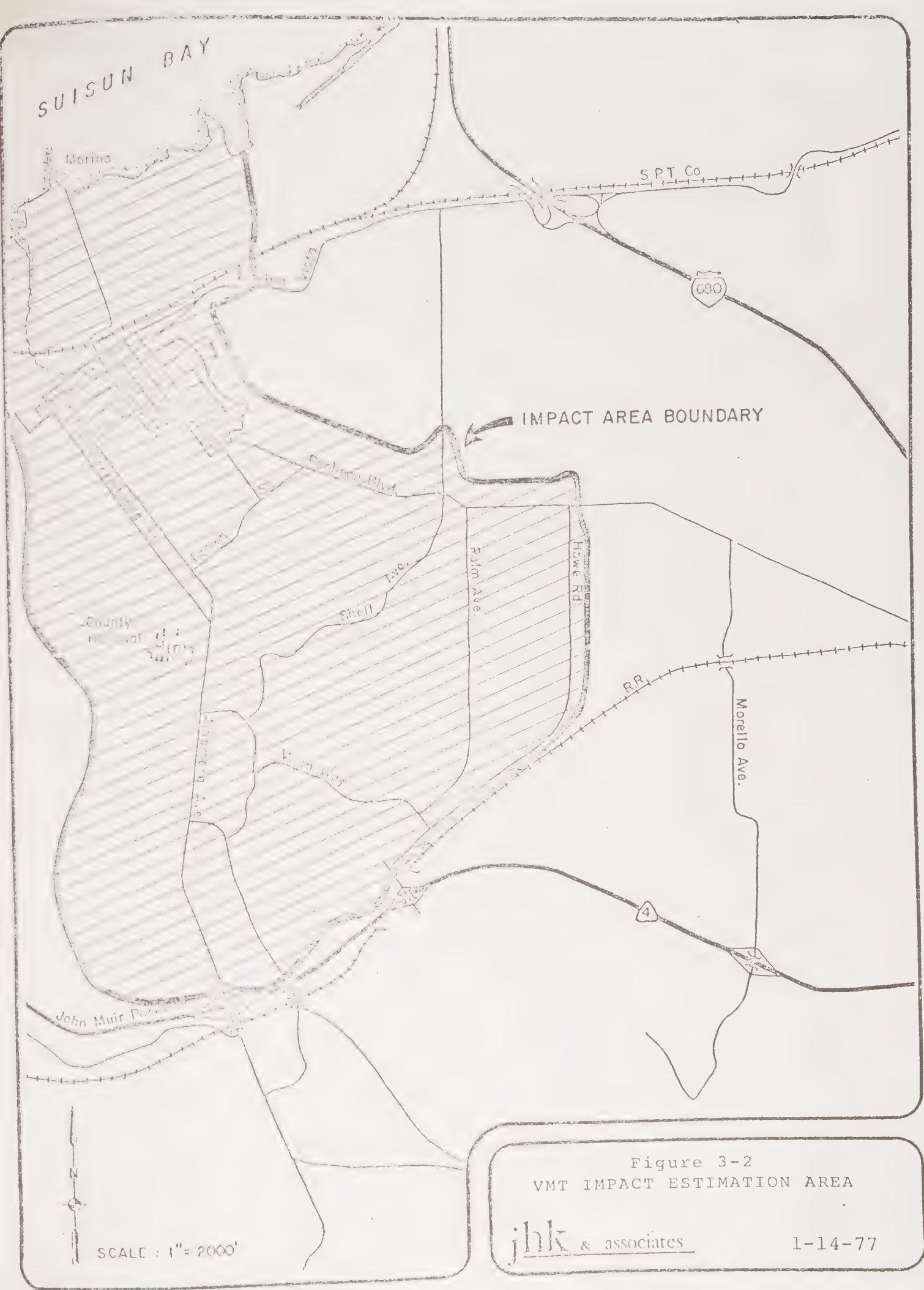


Figure 3-1
1976 TRAFFIC COUNT LOCATIONS

jhk & associates

1-14-77



SUISUN BAY

Morino

SPT Co

630

IMPACT AREA BOUNDARY

Suisun Blvd

Shell Tce.

Palm Ave.

Howe Rd.

RR

Morello Ave.

4

John Muir Pk



SCALE : 1" = 2000'

Figure 3-2
VMT IMPACT ESTIMATION AREA

jhk & associates

1-14-77

summary comparison of 1974 and 1976 traffic volumes is contained in Table 3-1.

The variation in the A.M. and P.M. peak hour volumes was also examined. It was anticipated that any growth in traffic attributable to the Civic Center area would be reflected in the peak hour volumes since a major portion of these volumes is commuter traffic oriented to the Civic Center. Generally, the A.M. peak hour showed the same type of random variation observed in the daily traffic volumes. Marina Vista was definitely lower by 10-40%. Pacheco Boulevard and Pine Street were both up. Pacheco Boulevard by approximately 12%, Pine Street by about 8%. Northbound Alhambra Avenue was also up. Taking all volumes into consideration however, there was little indication of an average overall increase.

The P.M. peak period volumes were lower overall. Only one station showed an increase in 1976 over 1974. The P.M. peak traffic volume appears to have spread. The hour centered on 4:30 has increased in 1976 relative to 1974 while the hour centered on 5:00 has decreased. Overall however, it is indicated that there has been very little change in total traffic in the central Martinez area in the last two years. For that reason and the lack of sensitivity in the previous VMT estimate it is felt that the 110,000 estimate is adequate for the current report. The rate of increase anticipated in 1974, which was set at 4% per year, is simply not reflected in the traffic volume data obtained recently.

Parking

The parking study undertaken as part of the base year assessment focused on two areas. The first was delineation of the parking lots and on-street parking area where Civic Center parking may be expected to occur. The second area was estimation of the level of demand for the space that was so delineated. Defining the area to be considered in the Civic Center parking study was based on previous parking studies undertaken by the County in the Civic Center area,⁵ aerial photo analysis and a weekend examination of the streets in the area. This allowed JHK to make a determination of those streets which appeared to be utilized for residential parking as opposed to those which appeared to have their major parking use related to the Civic Center. Also on the west side of the Civic Center much of the parking is related to the commercial uses in the downtown area. The area encompassed by the parking study is shown on Figure 3-3. Basically the area surveyed extended from Ferry Street easterly to Grandview Avenue and from Henrietta Street north to the Southern Pacific Railroad. The narrow road widths and steep grades in much of the East Hillside Neighborhood area precludes Civic Center parking there.

⁵Paul E. Kilkenney, Contra Costa County Public Works Department, April 4, 1976. Memo from Victor W. Sauer to A. A. Dehaesus.

Table 3-1

PERCENT CHANGE IN TRAFFIC VOLUMES 1974-1976

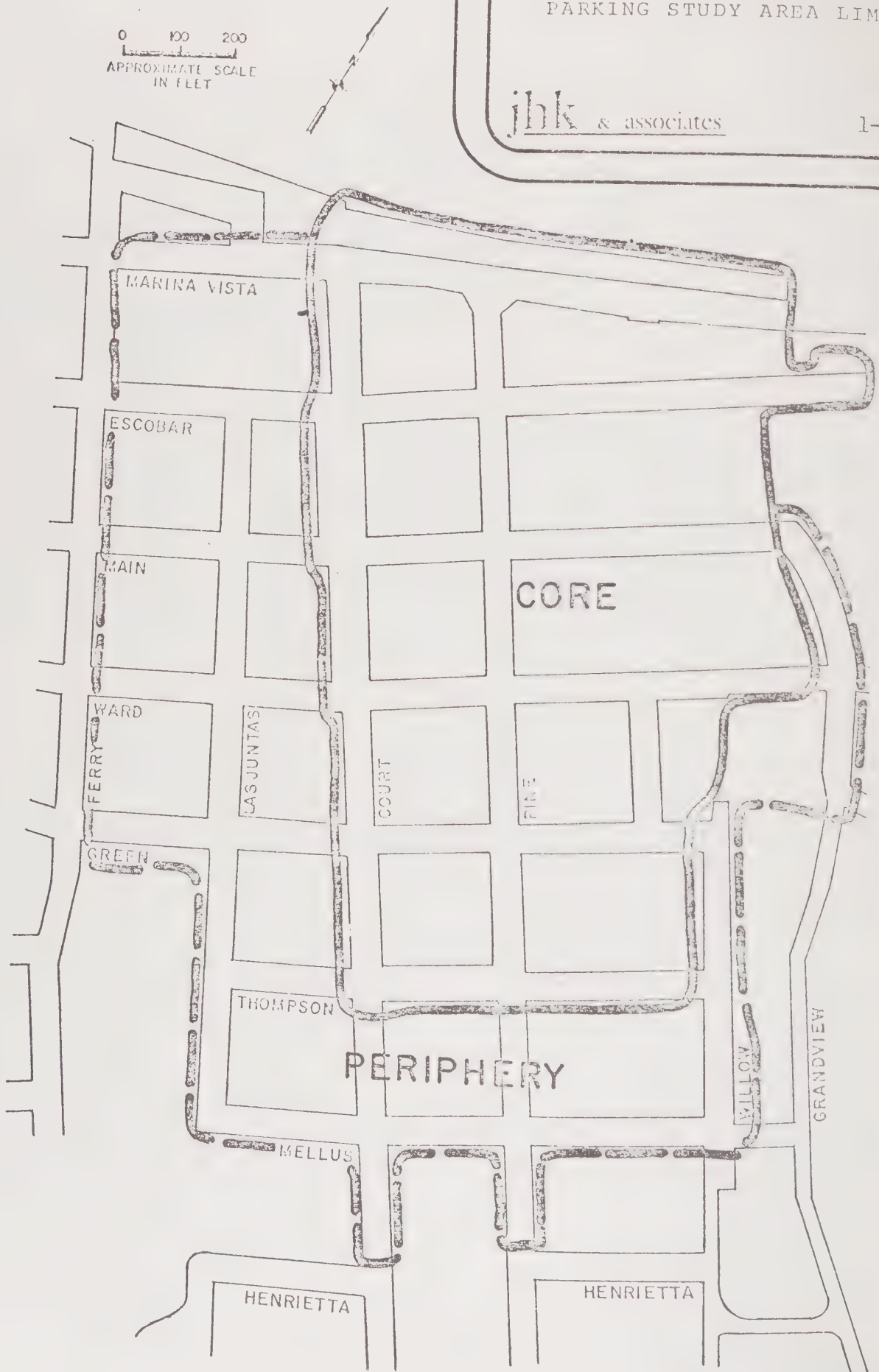
<u>Location</u>	<u>24 Hour Volume</u>	<u>A.M. Peak Hour</u>	<u>P.M. Peak Hour</u>
Alhambra Ave. N/O B St. Northbound	+8.2%	+11%	+4%
Alhambra Ave. N/O B St. Southbound	-3.0	- 1	-7
Escobar St. W/O Court St. Eastbound	+0.5	-11	+5
Escobar St. W/O Court St. Westbound	-6.8	+ 6	-5
Escobar St. E/O Pine St. Eastbound	+6.4	-10	-1
Marina Vista W/O Court St. Westbound	+4.6	-32	+8
Marina Vista E/O Pine St. Westbound	+0.6	-11	+1
Marina Vista W/O Shell Ave.	-35.0	-37	-29
Pine St. S/O Main St. Northbound	+2.1	+12	-1
Pine St. S/O Main St. Southbound	-2.8	- 6	-1
Pine St. S/O Susana St. Northbound	-2.4	+ 6	-9
Pine St. S/O Susana St. Southbound	-5.7	+ 2	-3
Pacheco Blvd. W/O Shell Ave.	+1.7	+13	0
Pacheco Blvd. W/O Arthur Rd.	-4.5	--	-5.3

Figure 3-3

PARKING STUDY AREA LIMITS

jhk & associates

1-14-77



To aid in undertaking the parking demand study the area was further divided into north and south portions, the dividing line being the north curb line of Ward Street. The subdivision into north and south areas was based primarily on spreading the amount of effort required to obtain the parking data evenly among the personnel available.

The study of parking utilization was based on the number of available parking spaces at various times during the day. The time periods examined were approximately between 7:00-7:30 A.M., 10:00-10:30 A.M., 12:15-12:45 P.M., 2:30-3:00 P.M. and 5:30-6:00 P.M. Based on these observations utilization curves were developed for the north area, the south area, parking lots, and the streets. The parking area was further subdivided into a Civic Center core, which is basically the area within the Civic Center cordon defined in the 1963 plan report, and the periphery which included the residential areas to the south and east and the downtown area to the west of the Civic Center.

Observations of parking accumulation were made for a five day period during the peak accumulation time which is the mid-morning. The rest of the periods were studied in the three day mid-week period, Tuesday, Wednesday, and Thursday. The north area was also included in a Friday analysis. Based on the mid-morning period the demand variation throughout the week may be plotted. Hourly variation may be determined from the three day average in the mid-day period. Data was not complete for the south area due to some missed counts. There is sufficient data however, to develop the utilization curves and to analyze the day-to-day and hourly variation in parking demands. The parking data was summarized in a series of tables and utilization curves. The summary tables have been supplied to the County Planning Department. Utilization curves and summaries are contained in Chapter 4.

Congestion and Delay

Evaluation of congestion and delay involves four basic factors. The first and foremost with respect to the base condition is field observation of traffic flow, delay, and vehicle queues.⁶ Field observation is supplemented with vehicular and pedestrian traffic volumes and facility characteristics such as street width, traffic control, channelization, and other physical factors. These three elements allow relationships between present congestion, traffic volume and facility condition to be established. The fourth factor is analytical techniques which have been developed for application to a wide variety of traffic situations. In general the techniques apply an underlying theoretical consideration of traffic flow to a large number of observations to derive relationships which allow

⁶A line of stopped vehicles is a queue. A group of moving vehicles spaced relatively close together, with greater separation between subsequent groups, is a platoon.

traffic congestion and delay to be predicted when field observation cannot be accomplished. The most widely used procedures are those prescribed in the Highway Capacity Manual.⁷

Analytical techniques must be applied with a considerable amount of judgement. They are, at best, approximations of what may be expected based on a large number of observations. Their applicability to any given situation depends upon numerous local factors. In general, the analytical techniques that have been published by the Highway Research Board (now Transportation Research Board) apply primarily to highly controlled situations or in situations where there is relatively high-speed flow such as arterial streets or freeways. In dealing with lower level facilities or lower levels of control the techniques become more and more approximate. However, they are the most reliable source for estimating future conditions given that a basic understanding of the current interaction between traffic volumes, facilities, and congestion can be obtained.

Mid-day and A.M. and P.M. peak period traffic conditions were observed in the Civic Center area. Traffic flow conditions on the outlying arterials were also examined during the commute periods. From consideration of observations made in conjunction with the traffic volumes and the facility characteristics, estimates of the congestion potential of the intersections in the Civic Center can be obtained. The results of this analysis are discussed in Chapter 4.

FUTURE CONDITIONS

Forecast considerations apply to both the background traffic volumes and traffic volumes associated with the proposed project. Background growth to the year 1980 must be considered since that is the traffic environment within which the facility will operate. Implicit in this assumption is the understanding that regardless of whether any further construction takes place in the Civic Center area, there will be an increase in traffic as other factors such as Countywide population and demand for government services increase.

A 1980 forecast year was selected as this is the earliest that the Detention Facility may be considered to be fully operational. While the Facility may not meet its full inmate load in the year 1980, such utilization is possible. This is due to the fact that the number of inmates that will be held there is subject to many variables such as bail availability, or use by other agencies that are not directly related to any growth considerations. Court activity is also subject to a variable time frame. Assumption of 1980 however, allows the most conservative estimate, since if the level of activity for that period has been overestimated the

⁷Highway Research Board, Highway Capacity Manual, Special Report 87, Washington, D.C., 1965.

resultant impacts are also overestimated. The effect is to extend the validity of the forecast analysis for an additional period of time until the activity that is occurring in the new Facility is commensurate with what was assumed in this analysis.

Background Traffic Volumes and Parking Demand

Estimating the background traffic volumes and parking demand for 1980 is based on two considerations. First is the observed growth in traffic volumes in the Civic Center between 1974 and 1976. The second is forecast of general County growth which may be assumed to relate to the demand for services in the Civic Center area. Traffic volume data for 1974 and 1976 in the central Martinez area has shown no definitive pattern of change in the last two years. This may be due to two factors. The first is that in fact there has been no change and that in general there are the same number of employees and the same number of persons coming to the Civic Center area now as there was in 1974. The second consideration is that there may have in fact been a slight increase but that this increase was not enough to offset random variations in traffic which are normally expected. Therefore, it may be stated that the growth in traffic has been nil or very small. In either case it is substantially less than the 4% per year growth that was projected in the 1974 study.

Countywide population growth through the period 1970 through 1976 has averaged approximately 1.2% a year based on figures from the State of California's Department of Finance. This growth rate takes into account the most recent census in 1975. Based on estimates of population growth to 1990 prepared by the County Planning Department the average rate over the next four year period will be approximately 1% a year. It was assumed that the growth in demand for County services will be approximately twice that population percentage growth. With allowance for possible variation in traffic count data, an estimate of 10% growth to 1980 is considered reasonable. This is a relatively conservative estimate in that actual growth will probably be less. Traffic growth on the major arterials outside the Civic Center will be lower, as a percentage, due to the larger base volume. A 5% growth is assumed for these facilities.

Along with the growth in number of vehicles it was assumed that the distribution of trips coming into the Civic Center area will remain the same. That is, the relative proportion of traffic on the various major access routes will remain constant over the next four years. At the present time there is no reason to expect any significant shifts since there are no proposed major changes in the circulation system in the outlying area. There are a number of unknown factors which could affect the distribution of traffic into the Civic Center area and the total amount of traffic growth. It is uncertain whether the County will continue the present level of many services in face of increasing budget constraints. Also the County's policy of locating certain service functions in the local communities may restrict traffic activity in the County Seat. These and other factors make the use of more refined estimates

inappropriate in that to indicate a forecast reliability of one percentage point presumes much more is known about what may happen in the Civic Center area than is in fact the case.

It is assumed that the growth in parking demand will keep pace with the growth in traffic volume. Thus the same 10% growth figure that was used for expanding the traffic volumes in the Civic Center area may also be used to estimate the parking demand. This assumes that in the interim between now and 1980 the County does not institute any policies directed toward achieving a more efficient parking utilization. This is probably an overly restrictive assumption in that parking demand is currently high and facilities to alleviate it are limited. It is probable that there will be some inducement on the County's part to achieve greater efficiency of parking. However, a 10% increase in demand is again consistent with the use of a conservative estimate.

Proposed Detention Facility

The proposed Detention Facility alternatives analyzed in this report are the product of two years of discussion and planning. Rejection of the 1974 proposal by the Board of Supervisors provided the impetus for preparation of a new plan starting from scratch. Many proposals, such as Marsh Creek or Glacier Drive sites and multiple facilities, have been previously considered and rejected by the Detention Facility Advisory Committee. In the Committee's joint opinion the five alternatives selected for detailed analysis are clearly superior over the other candidate proposals.

The five alternatives vary primarily with respect to building configuration, parking lot size and arrangement, and street closures. The number of inmates, detention center staffing and court facilities are the same for each alternative. Therefore the amount of new (as opposed to relocated) traffic and parking activity generated by the Facility is also the same for each alternative. The aspects common to each alternative are summarized below:

Detention Center

Number of inmates	380
Total number of detention staff	127
Day shift	44
Swing shift	28
Night shift	14
Shift total for typical weekday	86
Transportation staff	22

Source: Detention Facility Service Program, Table VIII-2.

Courts in Facility Building

Superior Court staff (1 department)	5
Municipal Court staff (1 department)	8

Source: Detention Facility Service Program, Table VII-1, JHK & Associates.

The Superior Court department will not be used for actual trials, but will accommodate arraignments, preliminary hearings and pre-trial motions. In addition to the two courtrooms and adjunct facilities, a four-court Superior Courts building is programed for construction following the Detention Facility. This building will be constructed adjacent to the north side of the Facility (towards the existing Courthouse). All data describing the project used in this study is current as of December 16, 1976.

The five building alternatives are distributed among four sites. These are described below. The general locations of the building and associated parking lots are shown on figures in Chapter 4.

Site 1, Alternates A and B

Site 1 comprises three blocks east of Pine Street bounded by Pine, Ward, Willow and Mellus Streets. Green and Thompson Streets between Pine and Willow Streets are closed. Alternatives A and B vary the building configuration and the amount of parking on the site, otherwise they are the same. An additional parking lot located on the block bounded by Pine, Mellus, Court and Thompson Streets is included with these alternatives. (Figures 4-22 and 4-23)

Site 2, Alternate C

Site 2 comprises three blocks west of Pine Street bounded by Pine, Mellus, Court and Ward Streets. The Facility would share this super-block with the existing U.S. Post Office Building.* The area bounded by Pine, Green, Willow and Mellus Streets (two large blocks) becomes a large parking lot. Green Street between Court and Pine Streets and Thompson Street between Court and Willow Streets are abandoned under this alternative. (Figure 4-24)

Site 3, Alternate D

Site 3 is bounded on the north, east and south by Green, Willow and Mellus Streets. The west side is bounded by a diagonal connector curving west between Pine Street at Mellus Street and Court Street north of the former intersection at Thompson Street. This diversion of Pine Street to Court Street allows abandonment of existing Pine Street between Green and Mellus Streets. Thompson Street between Court and Willow Streets is also abandoned. Thompson Street east of Las Juntas becomes a cul-de-sac, as does Mellus east of Court Street. Court Street south of the diversion is curved to the east to form a right angle intersection with the diagonal connector. The small triangular area bounded by the Pine Street diversion, Court Street and the Mellus Street cul-de-sac becomes a parking lot. (Figure 4-26)

Site 4, Alternate E

Site 4 continues the concept embodied in site 3 one block further north. It is bounded on the north by Ward Street, on the

*Editor's note: Alternative C requires the removal of the U.S. Post Office.

east by Willow Street, on the south by Mellus Street and on the west by the Pine Street diversion and Court Street. This site encompasses five and-a-half large blocks. Pine Street between Ward and Mellus Streets, Green Street between Court and Willow Streets, and Thompson Street between Court and Willow Streets are all abandoned. Thompson Street, Mellus Street and Court Street south and west of the diversion are treated in the same manner as site 3, as is the triangular parcel. A minor variation of this alternate (E-1) has Willow Street form a cul-de-sac near the present Green Street intersection instead of continuing north to Ward Street. (Figure 4-27)

There are two revisions to parking and circulation common to all of the above alternates. The existing section of Willow Street between Ward and Green Streets has already been abandoned by the City, although the street is still open to traffic. This is incorporated into parking lots under each alternate. An additional parking lot accommodating 40 cars is constructed on County owned property east of the motor pool between Main and Escobar Streets.

Facility Generated Traffic

Traffic and parking demand generated by the Detention Facility and Court annex is based on estimates of staffing by shift, number of visitors to the Detention Facility (both official and unofficial), and the amount of Court activity that may be attributed to additional judicial activity compared to that which has been transferred from the existing Courthouse. Data relating to the number of persons that may be involved in each of these areas has been obtained from the County. This person trip information has been converted to representative vehicle trips by JHK using observed vehicle occupancy in the Martinez area. Some trip purposes, formation of the jury pool, for example, are not conducive to ride sharing therefore relatively low auto occupancy figures were used for these activities. The level of activity is further stratified by peak periods. The intent is to identify the time of day when the most critical combination of traffic factors may occur.

Parking demand by employees and visitors is also based on arrival times and duration of stay. For example, visitor parking will be for a much shorter duration than employee parking. Therefore, considerable overlap may be assumed in use of visitor spaces. Most unofficial visiting will occur outside of normal work hours when parking is in plentiful supply. Employee demand must allow for a greater number of available spaces since the duration will be longer. Overlapping shifts have also been taken into consideration in the development of parking demand analysis.

The general pool of traffic and parking demand is common to all of the site alternatives. It is related to the number of employees and the amount of court activity that will be generated. The site plan alternates do not imply any change in the number of inmates, staffing size or the court facilities to be provided. Therefore, the total impact with respect to increased activity is

the same for any alternative which is considered for the Civic Center area.

Detention Facility Induced Traffic Patterns

Location of parking lots and buildings and street abandonments which do vary between the alternate Detention Facility proposals will affect traffic patterns in the Civic Center area. Location of parking lots and changes in their access and configurations will alter both vehicular flow and pedestrian flow in the Civic Center area. Not only will this affect the new traffic, which is generated by increased activity related to the proposed project, but it will also impact the distribution of background volumes in the Civic Center vicinity. There may also be shifts in traffic volumes on the outlying arterials due to changes in access orientation. In general, the effect of any particular project proposal on traffic in the Civic Center area is a combination of an increase in traffic due to new activity introduced into the Civic Center area and a relocation of activity due to changes in circulation patterns and parking configurations.

Construction Traffic

During construction the Detention Facility project will affect traffic and parking in the Civic Center area. Street relocations, street closures, and parking lot replacements will affect traffic patterns and parking supply as various elements commence, depending upon the construction schedule followed. In addition to disruption of traffic patterns due to relocation activities there will be additional traffic in the Civic Center area. This will be composed of employee trips to the construction site and material and construction delivery activity. Estimates of the number of employees involved in construction and the times they would be reporting to and from the site were obtained from the County. The County also provided an estimate of possible peak material demands and heavy truck activity. There are some controls available with respect to both construction employee traffic and material handling since the County can, to a certain extent, control both the hours of operation and the amount of activity that can occur within a given period of time.

Of particular importance to the Civic Center area are the locations of construction employee parking facilities, contractor's yards, and material storage locations. With some alternatives the space necessary is available adjacent to the construction site. With others the room must be provided away from the immediate vicinity of the construction activity. JHK discussed various options with respect to yard locations and parking facilities with the County Public Works staff who will be directing the construction. The impacts of construction traffic are considered in Chapter 4.

Other Traffic Generating Activities

In general, it is not anticipated that there will be any increase in traffic activity in the Martinez downtown area that

has not been accounted for in the 10% background adjustment. The residential areas to the east and south of the Civic Center area are stable. The City is adamant in its position of maintaining the single family character of East Hillside residential area. Perhaps the most opportunity for conversion from residential to commercial use, with an increase in traffic activity, is along Pine Street where residential uses may convert to low intensity commercial activity.

The Martinez downtown area has shown little change within the last six years. In general, it is a stable area although there have been shifts in individual businesses. One of the more significant factors has been replacement of some private enterprise operations along the west fringe of the Civic Center area with County activities. Where office use has been replaced by County offices there has been little change in traffic characteristics associated with the turnover. Where commercial activities have been replaced by County activity the net effect is more difficult to assess since some County functions generate business during the day and others do not. In general however, there are no large scale changes foreseen in the next four years.

The only major addition in the Martinez area that is expected to have any impact on traffic near the Civic Center is the Waterfront Park. Traffic generation and daily and weekly variation in traffic activity at the park has been estimated by JHK based on observed trip activity in the Bay Area for similar types of recreational marina activities. CALTRANS has undertaken a comprehensive program of trip generation research in the Bay Area and has published traffic data for a number of recreational activities.⁸

With respect to the Park project itself, construction is due to begin on the first phase in Spring 1977. This consists of 300 paved parking spaces with lighting and landscaping and construction of an access road north of the Ferry Street railroad crossing. The entire project itself is aimed at enhancing the attractiveness of the marina area through addition of business activity (restaurant, marine chandlery) and extensive landscaping, including lawn area. Berths may be refurbished, but no expansion beyond the present number (370) is proposed. Dry boat (trailered) storage for 120 craft is included in the plan.

The time schedule for implementing the entire project is not well defined. In general, it has been assumed that 1980 will represent the half-way phase of the Park and at that time its trip characteristics will be mature. As with other assumptions regarding traffic activity over time this is considered to be conservative. On the whole, trip activity by the Park is not expected to seriously impact the Civic Center area since the Park will generate peak traffic on weekends and holidays. This is discussed further in Chapter 4.

⁸ California Department of Transportation, District 4, Progress Report on Trip Generation Research Counts, Nos. 1-10, San Francisco, California, July 1964 - July 1975.

4. STUDY FINDINGS AND CONCLUSIONS

This chapter of the report presents the results of the study effort described in the preceding chapter. From the study results JHK has made findings and drawn conclusions in the areas of circulation and access systems, traffic volumes, vehicle miles of travel, parking, and congestion and delay. These are presented here for the existing condition to identify areas of constraint and opportunity and to define the base against which future conditions may be analyzed and evaluated. The study results respecting the future conditions and the effect of alternate Detention Facility proposals on these areas are presented here to define the impacts associated with the project. The effect of possible project alternatives and mitigation measures is discussed in Chapter 5.

EXISTING CONDITIONS

This section of the report describes existing conditions (1976) in the Civic Center area and on the major arterial streets connecting the Civic Center to the regional highway facilities. This section emphasizes those areas where capacity limitations currently exist or appear imminent.

Circulation and Access Systems

The regional highway facilities connecting Martinez and the Civic Center area to the County area it serves are State Route 4 and Interstate Route 680. Both of these highways are fully developed freeways in the Martinez area. Operating conditions are generally good. IS 680 northbound is occasionally (three to five times a year) backed up on Friday afternoons and evenings preceding peak recreational travel weekends due to capacity limitation at the Benecia Bridge. This has no significant effect on access to Martinez. SR 4 has no periodic congestion at all near Martinez.

There are three principal arterial streets that connect the central Martinez and Civic Center areas to the regional highways. These are Alhambra Avenue (one-way couplet with Berrellessa Street at the north end), Pacheco Boulevard-Pine Street, and Marina Vista. Alhambra Avenue is a two-way four lane facility south of Arch Street. North of Arch, Alhambra Avenue is two lanes one-way northbound. It is paired with Berrellessa Street which is two lanes one-way southbound. Alhambra Avenue is the major through street with the side streets controlled from south of SR 4 north to Escobar Street. At Escobar all approaches must stop. The prevailing speeds are in the 30-35 miles per hour range.

Due to discontinuities in the rectangular street grid caused by Alhambra Creek, there are only four east-west streets which connect Alhambra Avenue, which lies on the west side of the downtown, to the Civic Center which is located east of the central commercial area. Green, Ward, Main and Escobar Streets are all two lane two-way facilities. Main Street is also the major down-

town street, therefore through traffic to the Civic Center primarily uses the other three. Escobar Street is also the major access between north Martinez and IS 680.

Pacheco Boulevard is a two-way two lane facility of varying width. Traffic signals are in place at the Howe Road and Arthur Road intersections, at all other intersections Pacheco takes precedence over the side streets. Pacheco Boulevard has been widened at the major intersections; Howe Road, Morello Avenue, Arthur Road, to provide left turn storage outside of the through traveled way. Speeds are around 35 miles per hour east of Shell Avenue, 30 miles per hour west.

Capacity restraints occur at the signalized intersections and in the vicinity of Shell Avenue and Jones Street. The signalized intersections may be compensated for by widening in the vicinity of the intersections. The restraints at Shell Avenue and particularly at Jones Street are due to an extremely curved alignment. Correction here would require substantial rerouting and construction.

Marina Vista is a two-way four lane street from IS 680 west to the "Y" at Escobar Street. West of Escobar it is two lane one-way westbound to Berrellessa Street. Marina Vista is the through street at all intersections except Ferry Street, which is a four-way stop. Speeds are around 45 miles per hour on the eastern portion, 25-30 miles per hour near the Civic Center and north of downtown. Capacity on Marina Vista is restrained by a series of sharp curves and restricted sight distance east of the "Y".

From the above discussion it is apparent that access to the Civic Center area (and downtown Martinez in general) is somewhat restrained. Alhambra Avenue is the superior route with respect to width, grade and alignment, however it does not directly serve the Civic Center. Alignment constraints in the other two routes would require substantial construction effort to correct. Such projects are not foreseeable now. Therefore the analysis of traffic impacts must recognize that there is a limit to the amount of traffic growth that may be reasonably accommodated. The discussion of congestion and delay addresses this in more detail.

Local access and circulation in the vicinity of the Civic Center is provided by a rectangular grid of streets. North-south streets are Las Juntas Street, Court Street, Pine Street and to a lesser extent, Willow Street and Grandview Avenue. East-west streets include Marina Vista, Escobar Street, Main Street, Ward Street, Green Street and, again to a lesser extent, Thompson Street and Mellus Street. The streets described as lesser are involved primarily in on-street parking or minor parking lot access. They do not connect major movements. Ward Street and Mellus Street are the major access streets into the East Hillside Neighborhood area.

Most streets in the Civic Center vicinity are 36 to 38 feet wide curb to curb with one lane of traffic each way and parking on

both sides. The major exceptions are Ward Street which has no parking on the south side between Pine Street and Grandview Avenue due to inadequate width and Court Street which has angle parking on both sides between Escobar and Main Streets.

Escobar Street and Marina Vista form a one-way couplet east of Pine Street. Escobar Street is one-way eastbound with two lanes and parking. West of Pine Street; Escobar Street is two-way, one-lane in each direction. Marina Vista is two lane one-way westbound.

Traffic control in the area consists mainly of Stop signs. Between Alhambra Avenue and Pine Street, the east-west streets are through with the exception of the previously mentioned Marina Vista-Ferry Street intersection. The intervening north-south streets are all stopped at Marina Vista, Escobar Street, Main Street, Ward Street and Green Street. At Pine Street, all east-west streets south of Escobar Street are stopped. Pine Street itself is stopped at Escobar Street and at Marina Vista. At Jones Street, the Pine Street - Pacheco Boulevard transition is free-flowing with all other side streets stopped. All streets in the Civic Center area are subject to a 25 mile per hour speed limit.

West of Pine Street, the topography is relatively flat. There are no significant grades on the east-west streets accessing the Civic Center except for a slight rise approaching Court Street east and west. Steepest grade (4%) is on Escobar Street. East of Pine Street grades become significant, running from +4% to +7% west to east. East of Grandview Avenue the west to east grades approach +12 to +15%. Such severe grades discourage non-residential traffic from entering the upper reaches of the East Hillside neighborhood. From Pine Street west the north-south streets in the Civic Center area are relatively flat except for Court Street which rises from Green Street north to Ward Street, descends from Ward Street to Main Street, is fairly flat from Main Street to Escobar Street, then descends again to Marina Vista. The grades approaching Court Street from east and west are most significant for their effect on sight distance.

Public transportation has a presently small but important role in County Civic Center accessibility. It is now possible to get to the Civic Center from most of the County by transit. Since the 1974 study, local transit service has been instituted in the central County communities of Concord, Pleasant Hill, central Walnut Creek, Moraga and south Orinda. In addition, a Service Area has been established in east Contra Costa to provide local service from Pittsburg to Brentwood, supplementing the BART express bus corridor service to Concord. BART express bus service also extends down the San Ramon Valley. AC Transit or BART express also serve most of West Contra Costa.

The BART express bus service (operated by AC Trainst) between Martinez and the Concord BART station (line M) has extended operation to compliment the BART evening service. Busses operate hourly from approximately 6:00 a.m. to approximately 11:00 p.m. During peak morning and late afternoon commute periods, time between busses is about half an hour. In all, there are 23 busses from Martinez to

Concord and 24 busses from Concord to Martinez each weekday.

Greyhound also serves the Martinez area. Two inter-city busses a day each way between San Francisco and Stockton (and intermediate points) are routed through downtown. Busses from Oakland arrive at approximately 8:50 a.m. and 5:35 p.m., to Oakland busses depart at 10:40 a.m. and 6:55 p.m. Greyhound provides the only weekend bus service to Martinez.

Both Greyhound and BART express service are basically long distance line haul operations, although the BART service does stop along the Alhambra Avenue corridor north of SR4. Within Martinez, two taxi cab companies provide local door-to-door service and service to neighboring communities. For its size, Martinez has a relatively large number of cabs. This may be attributed in large part to the Shell Oil Company wharf and the County and U. S. Veterans hospitals.

Traffic Volumes

Existing traffic volume data was collected for streets in the Civic Center vicinity and on the major arterials accessing the downtown area. 1976 weekday traffic volumes are shown on Figures 4-1 and 4-2. Figures shown to the nearest unit are actual twenty-four hour count data. Volumes shown to the nearest hundred are estimates of daily volume based on the manual peak period counts and peak hour relationships derived from the machine counts and consideration of nearby land uses. Volumes are two-way unless indicated otherwise or posted on one-way streets.

The major traffic carrying arterial is Alhambra Avenue, followed by Pacheco Boulevard, then Marina Vista. This order is not unexpected since Alhambra Avenue serves a number of major traffic generators and a multiplicity of trip purposes. Similarly, Pacheco Boulevard serves a greater number and variety of activities than Marina Vista. The major traffic facility in the Civic Center vicinity is Pine Street. This is followed by Main Street, then Escobar Street and Marina Vista which are generally comparable. These are then followed by Green and Ward Streets, which are also similar. Court Street follows. After Court Street, the traffic volumes on the remaining streets are quite low; well under 1,000 vehicles a day each.

The existing A.M. and P.M. peak hour volumes are shown on Figures 4-3 through 4-6. These volumes are representative of the typical commute periods, they occur during the same time interval. The difference in daily traffic volumes on the arterial routes is much less apparent in the peak flow, particularly in the A.M. Typically, the A.M. hour is primarily home-to-work or home-to-school trips. These volumes show a much more uniform distribution approaching the central Martinez area. In addition to the Civic Center, major employment attractors are Shell Oil and the various union hiring halls west of the downtown commercial area. The P.M. volumes, which typically contain a large shopping and service trip element,⁹ are more reflective of the total daily trip pattern.

⁹ Bay Area Transportation Study Commission, Bay Area Transportation Report, Berkeley, California, May 1969.



Figure 4-1
1976 WEEKDAY TRAFFIC VOLUMES

jhk & associates

1-14-77

Figure 4-2
1976 WEEKDAY TRAFFIC VOLUMES

jhk & associates

1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET





Figure 4-3
 1976 A.M. PEAK HOUR VOLUMES.
jhk & associates
 1-14-77

Figure 4-4
1976 A.M. PEAK HOUR VOLUMES

jhk & associates

1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET





Figure 4-6
1976 P.M. PEAK HOUR VOLUMES

jhk & associates

1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET



The hour-to hour variation in traffic volumes for selected locations in Martinez are shown in Figures 4-7 and 4-8. These were selected to illustrate the patterns typical to facilities servicing different types of trip purposes. Marina Vista and Escobar Street show work trip travel, Main Street and Pine Street are commercial, Alhambra Avenue and Pacheco Boulevard are in between these.

A major element in peak period traffic flow is pedestrian movement. Figures 4-9 through 4-11 show the pedestrian crossing volumes during the A.M., Noon, and P.M. peak traffic hours. The A.M. and P.M. peak volumes clearly show the orientation of pedestrian traffic between the parking areas and the major employment locations centered around the Pine Street-Main Street intersection. The Noon pedestrian flow is heavily oriented between the Civic Center area and the retail and service establishments in the downtown area.

The P.M. pedestrian flow is of particular interest. While not apparent from Figure 4-11, the count data shows that around 70% of the hourly total occurs in the half hour centered on 5:00 p.m. 40% of the total flow occurs between 5:00 and 5:15. At the Pine Street-Escobar Street intersection, this is equivalent to an hourly rate of 430 pedestrians, which is not far from the Noon total on Main Street crossing Ferry Street. As the majority of the east-west movement takes place in the south crosswalk it is evident that, for a short period, this intersection experiences the highest pedestrian flow in the entire Civic Center area and probably the highest in downtown area.

Average auto occupancy observed at three locations is shown on Figure 4-12. The 8:00 a.m. values are typically commute trips. The midday values indicate a high proportion of ride sharing for social or business purposes. During the P.M. peak occupancy values are lower than midday, but still higher than the A.M. peak, indicating again the mix of trip purposes that occur in the afternoon and evening period.

The morning occupancy values, 1.14 to 1.2, are of particular interest because they are low. Biannual counts ¹⁰ at Caldecott Tunnel and the Bay Bridge Toll Plaza have consistently shown average daily auto occupancy factors of 1.3 and 1.4 respectively in recent years. During the peak periods, these values increase by 0.05. This indicates that there may be opportunity to increase commute auto usage efficiency in the Civic Center area by 8% to 18%. This is discussed further in Chapter 5.

Vehicle classification counts were made at the same locations as the occupancy counts. The results are summarized below:

		Percent of All Vehicles		
		Bus	Truck	Total
Alhambra Avenue/	AM	0.9	2.3	3.2
Berrellessa Street at	Midday	0.3	2.5	2.8
Green Street	PM	0.3	2.2	2.5

¹⁰ Institute of Transportation Studies (formerly ITTE) University of California, Berkeley, Traffic Survey Series A and C, 1960-1976 inclusive.

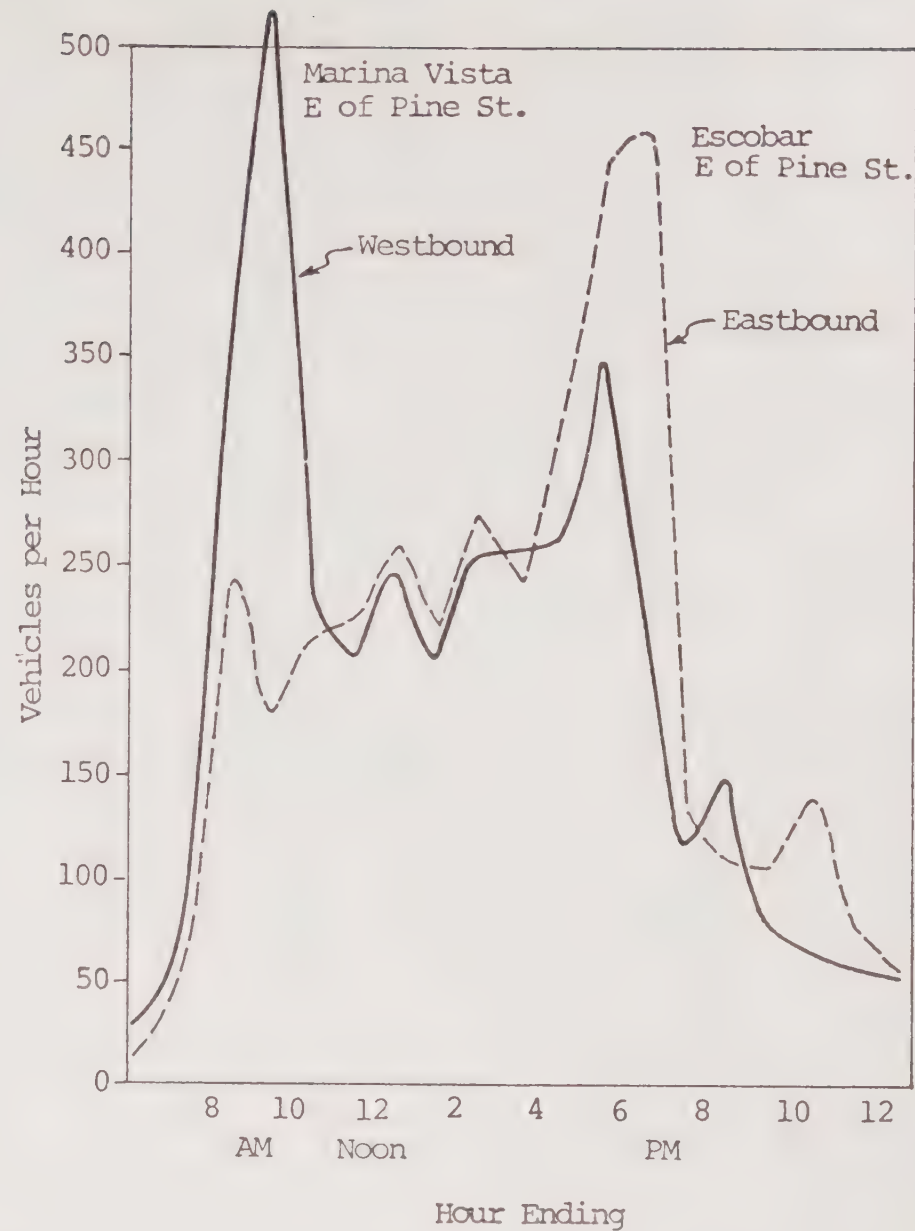
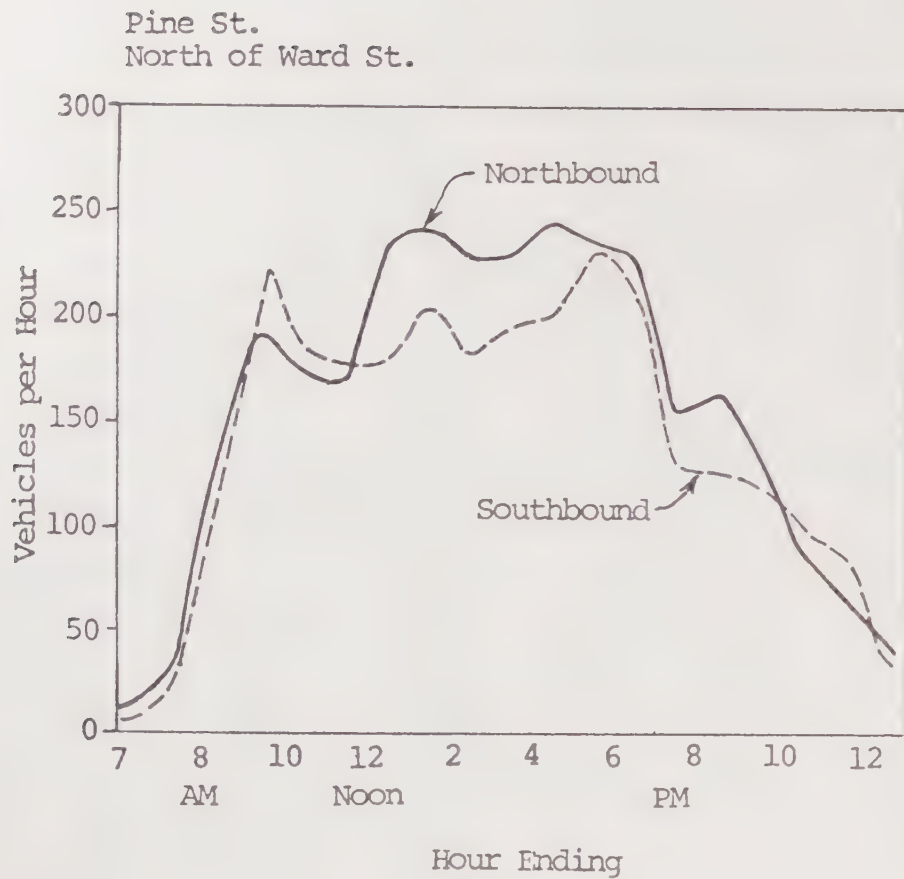


Figure 4-7
HOURLY TRAFFIC VOLUME VARIATION AT SELECTED LOCATIONS

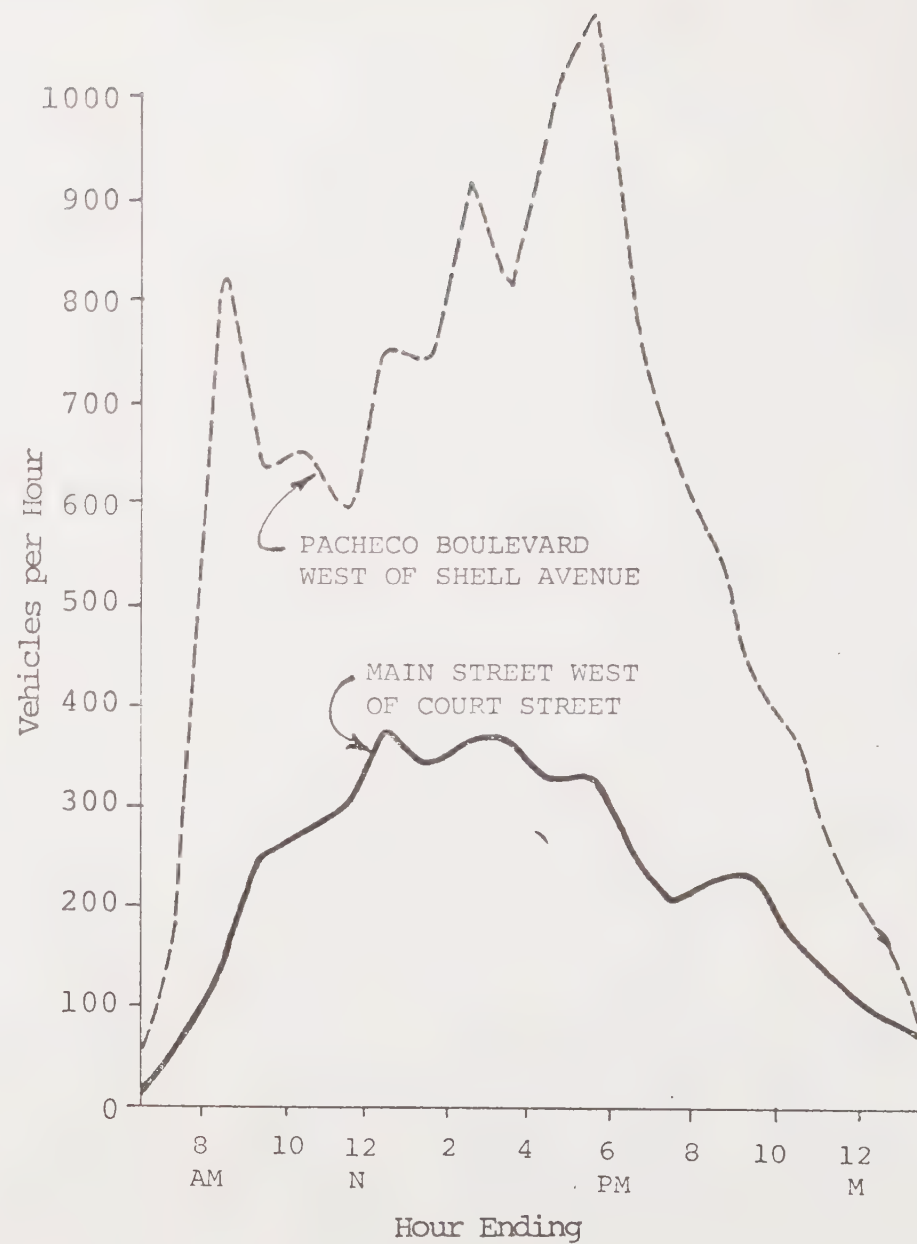
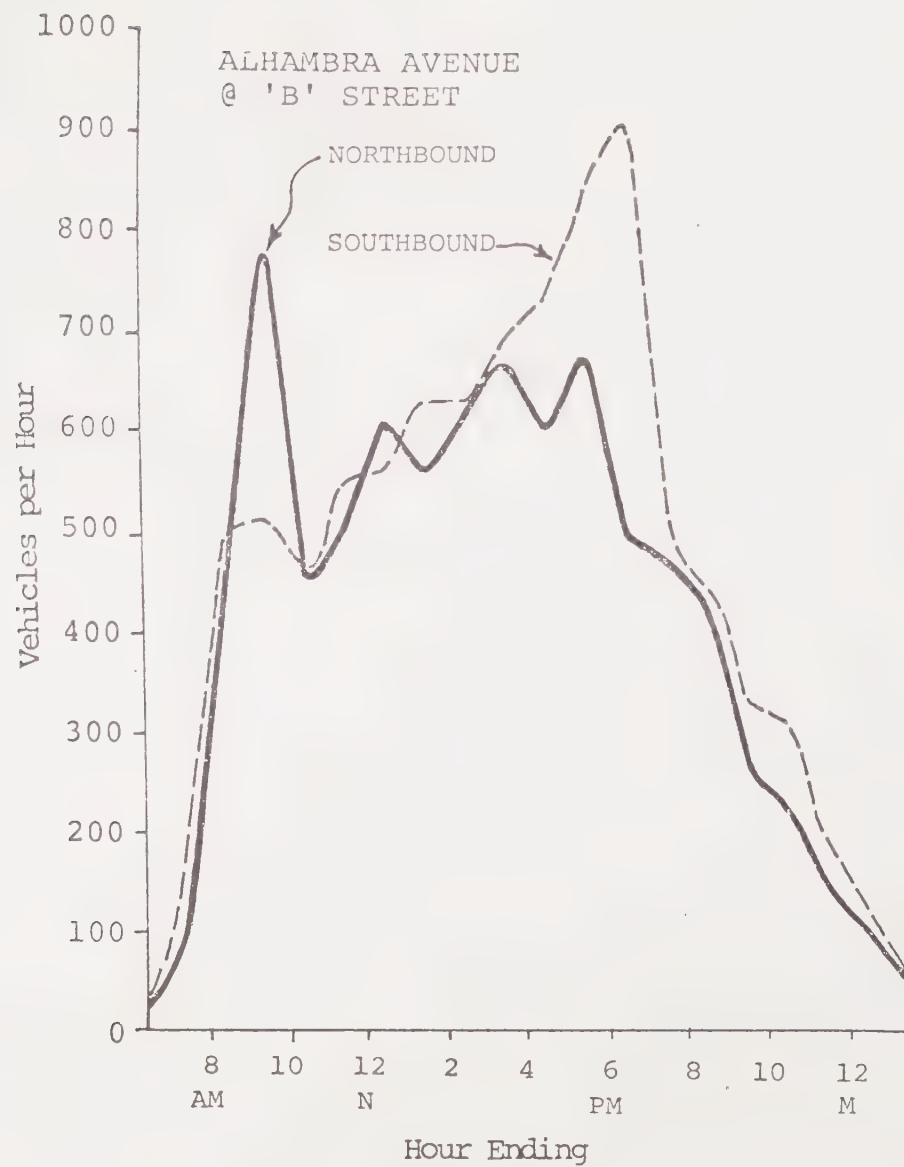


Figure 4-8

HOURLY TRAFFIC VOLUME VARIATION AT SELECTED LOCATIONS

0 100 200
APPROXIMATE SCALE
IN FEET



Figure 4-9
1976 A.M. PEAK HOUR PEDESTRIANS

jhk & associates

1-14-77



Figure 4-10
1976 NOON HOUR PEDESTRIANS

jhk & associates

1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET

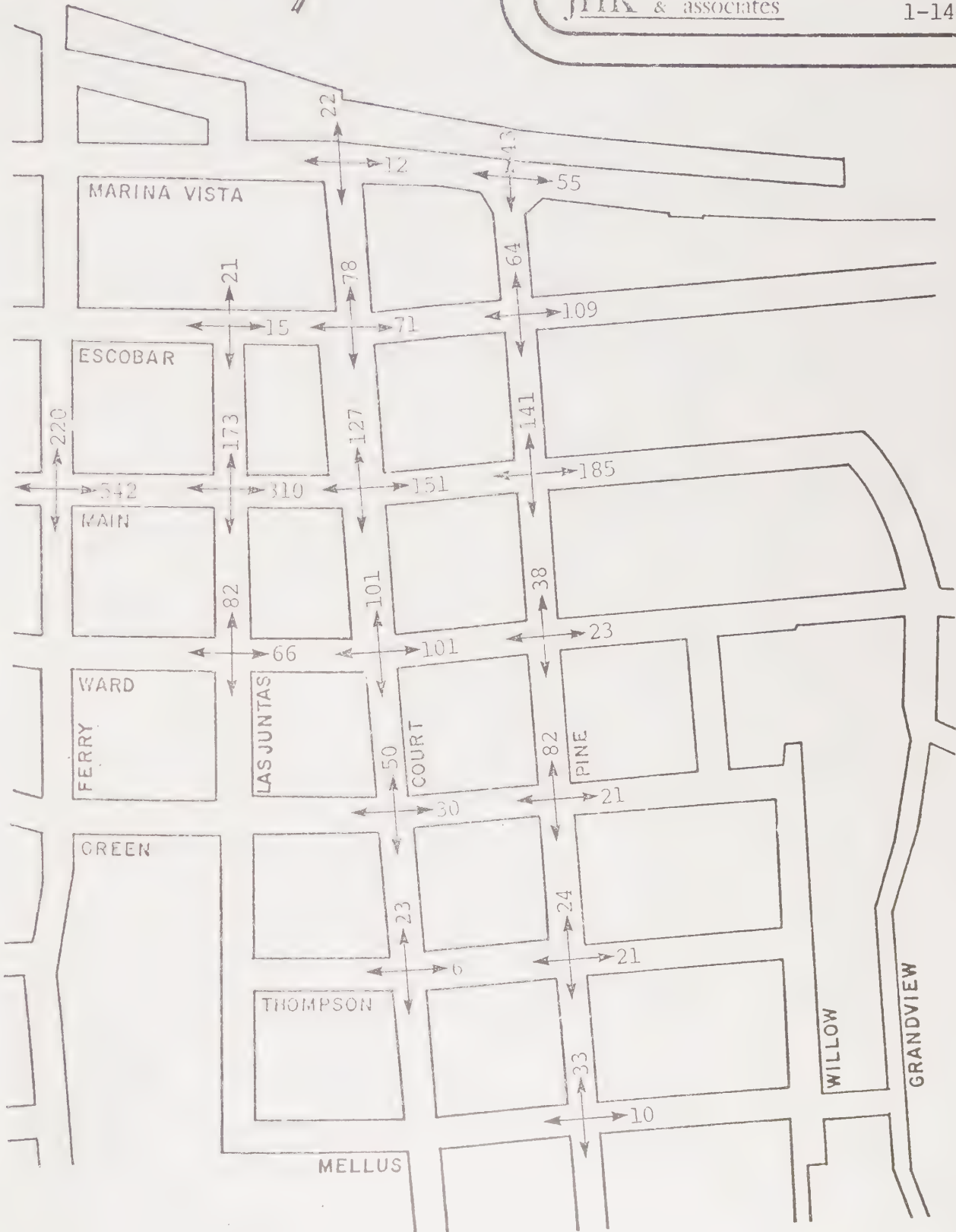


Figure 4-11
1976 P.M. PEAK HOUR PEDESTRIANS

jhk & associates

1-14-77



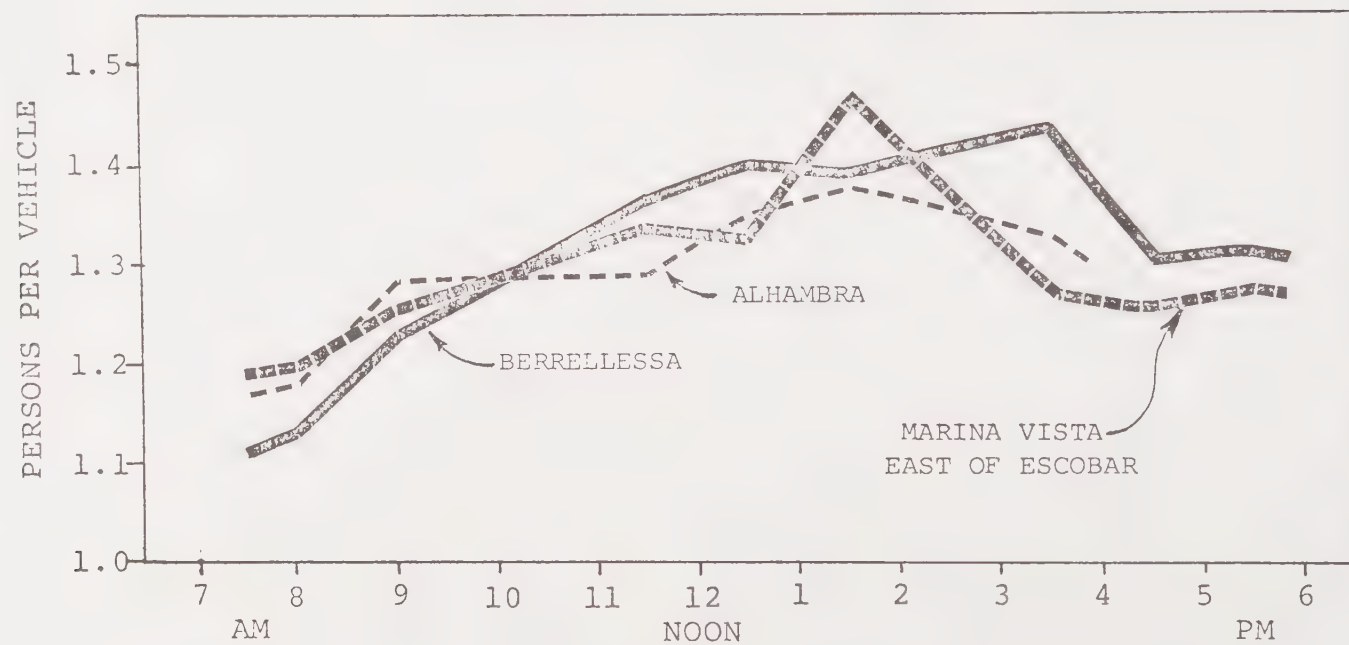


Figure 4-12
AVERAGE AUTO OCCUPANCY

		Percent of All Vehicles		
		Bus	Truck	Total
Marina Vista E/O	AM	0.5	3.9	4.3
Escobar Street	Midday	0.3	6.3	6.6
	PM	0.5	2.8	3.3

Busses are typical large school busses, not vans, or standard 48-passenger transit vehicles. Trucks are any vehicle not a bus with more than two axles or more than two wheels (duals) on the rear axle. The presence of a tank truck operation north of Marina Vista on the west side of the City is apparent in the Marina Vista values. Pine Street is probably similar to or slightly less than the Alhambra Avenue values. Other streets in the Civic Center area are certain to be below 2%.

Vehicle Miles of Travel

The procedure used to develop a current estimate of vehicle miles of travel (VMT) was described in Chapter 3. The rationale presented there supports continued use of the 110,000 (plus or minus 25,000) VMT value developed in 1974 for the impact area shown on Figure 3-2. Such a large and relatively insensitive base value may obscure small but real differences between alternatives. Therefore, a VMT estimate was prepared for a much smaller area; the area included within the Civic Center boundary developed in 1963. Such a value may be used to compare alternatives, however it is not meaningful for consideration of vehicle emission or energy consumption factors as the effects of these occur over large areas. A ten percent difference within the Civic Center cordon becomes a very small difference when total trip length is considered. Using the traffic volumes shown on Figure 4-2 produced a current VMT estimate of 3,780 within the cordon area.

Parking

Parking facilities in the Civic Center area consist of off-street parking lots and on-street parking. Lots are provided by the County, the City, and private interests. The distribution of on- and off-street parking is shown on Figure 4-13. The County maintains approximately 760 off-street parking spaces within the core area (core and periphery shown on Figure 3-3), excluding the Motor Pool, Sheriff's Patrol, and the reserved lots on the southeast and northwest corners of the Pine Street-Main Street intersection. There are an additional 180 lot spaces in the western periphery, excluding the Wells Fargo lot on the northeast corner of the Ward Street - Las Juntas Street intersection. Periphery lots include County, City, and private. On-street spaces include around 360 in the Core and 420 in the peripheral area. In all, there are around 1,720 parking spaces within reasonable proximity (800 to 1,000 feet) of the Civic Center.

Not all of the 1,720 spaces may be considered appropriate for exclusive Civic Center use however. With the exception of the lots adjacent to the Gordon Education Center and west of the Veterans building all spaces in the periphery are in equal or greater proximity to residential or commercial uses than to County functions. County office and residential use do not directly conflict as the demand characteristics

Figure 4-13
1976 PARKING DISTRIBUTION

jhk & associates

1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET



- 3 Number of spaces
- 2 hr
 - 2 hr meter
 - 8 hr meter
 - No parking
 - 15 min. parking

show different peak accumulations. Civic Center demand peaks in mid-morning and mid-afternoon, residential use typically peaks in early evening or night.¹¹ Civic Center and commercial use conflict directly with respect to time. There is insufficient data to identify the individual increments in the total demand however.

Parking utilization was sampled during the week of October 18, 1976 using the procedure described in Chapter 3. Maximum accumulation was observed during the Monday mid-morning period. This time corresponds to the formation of the weekly jury pool. Typically 180 prospective jurors are summoned for Monday at 9:00 a.m. weekly. Core lot utilization was 92% while on-street utilization was over 88%. Overall core utilization was 91% of all 760 on- and off-street spaces monitored. Monday accumulation reported in the 1975 survey by the County Public Works Department for the Central District (approximately the core area extended west one block) was 94%. Maximum lot utilization ranged between 85% and 90% the remainder of the week while on-street utilization fell back to the 70% to 75% range. Core parking utilization is shown on Figure 4-14.

Street parking in the periphery also peaked Monday morning at 75% utilization, then ranged from 60% to 68% the rest of the week. Lot parking in the periphery peaked Thursday afternoon at 96%. Monday accumulation was only third highest mid-morning (86%) and mid-afternoon (90%). About half of the lot spaces are located in two City lots (2 hour limit) oriented to downtown commercial use. Utilization patterns are related more to downtown than Civic Center activity. Peripheral parking utilization is shown on Figure 4-15.

The actual parking situation in the core lot is somewhat greater than the figures cited above. The recently razed area east of Pine Street between Thompson and Green (former location of Public Defender's office) was included in the off-street parking area analysis since it was being used for parking at the time of the survey. The capacity of the area was estimated to be 60 vehicles. The area is not suitable for wet weather use in its present unimproved condition, however. Removing this space from the analysis raises the utilization rate on the remaining lots by 5% to 9% during the mid-morning occupancy values summarized on Figure 4-16 results in a utilization rate in excess of 95% in the core area. Lots in the north portion of the core are experiencing essentially 100% utilization.

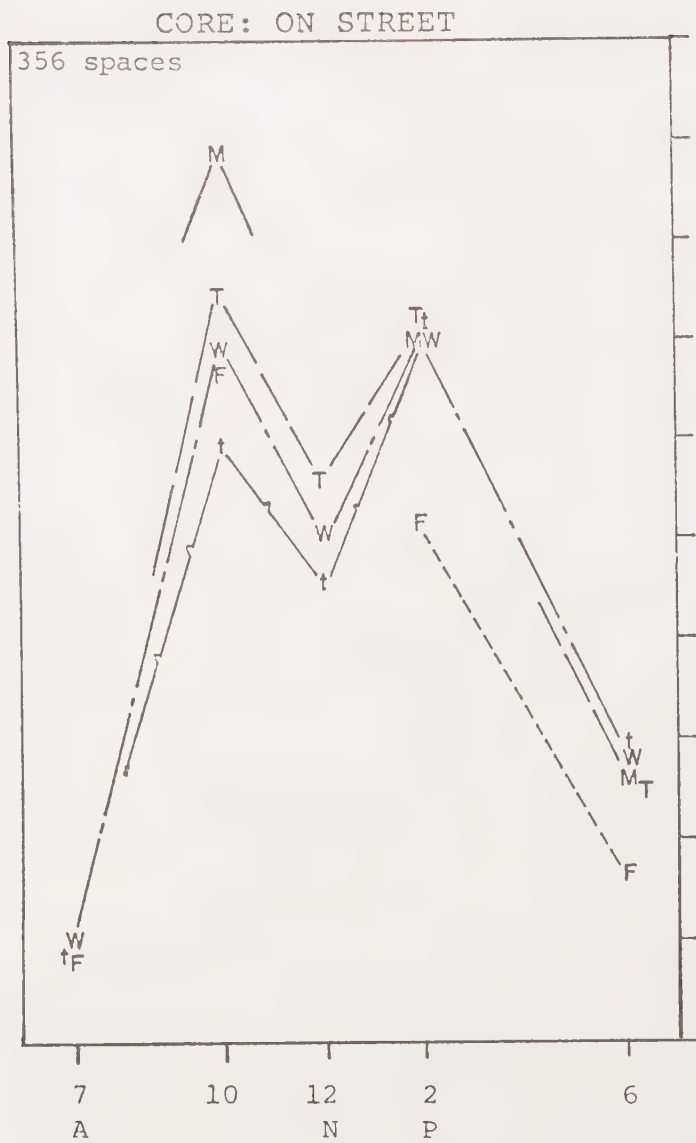
On-street parking is also heavily used at the peak accumulation period, approaching 90% in the core area. The available 10% of street parking is not uniformly distributed throughout the core, rather it clusters in the south and southeast. Therefore, the central area is saturated.

An 85% utilization rate for on-street parking in downtown areas is

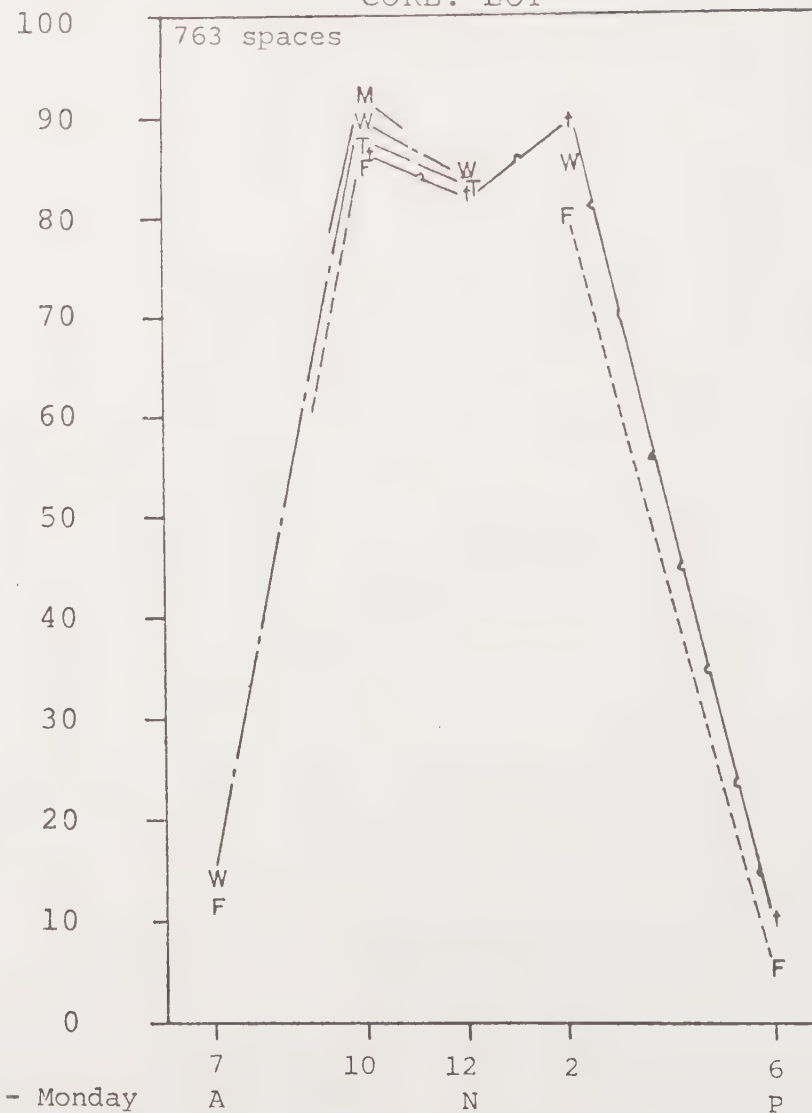
¹¹ Surveys by JHK & Associates (this report) and Contra Costa County Public Works Department, April 4, 1975. Memo from Victor W. Sauer to A.A. Dehaesus.

CORE AREA PARKING UTILIZATION

Figure 4-14



Percent



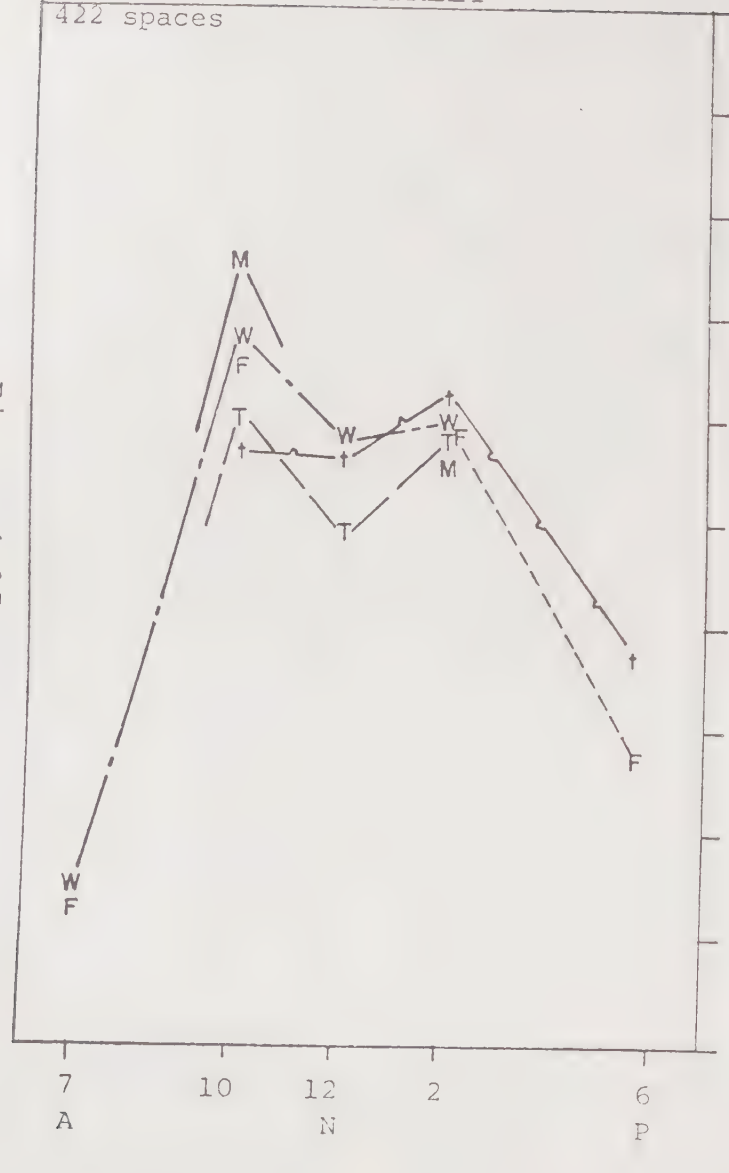
M - Monday
T - Tuesday
W - Wednesday
t - Thursday
F - Friday

PERIPHERY AREA PARKING UTILIZATION

Figure 4-15

PERIPHERAL: ON STREET

422 spaces

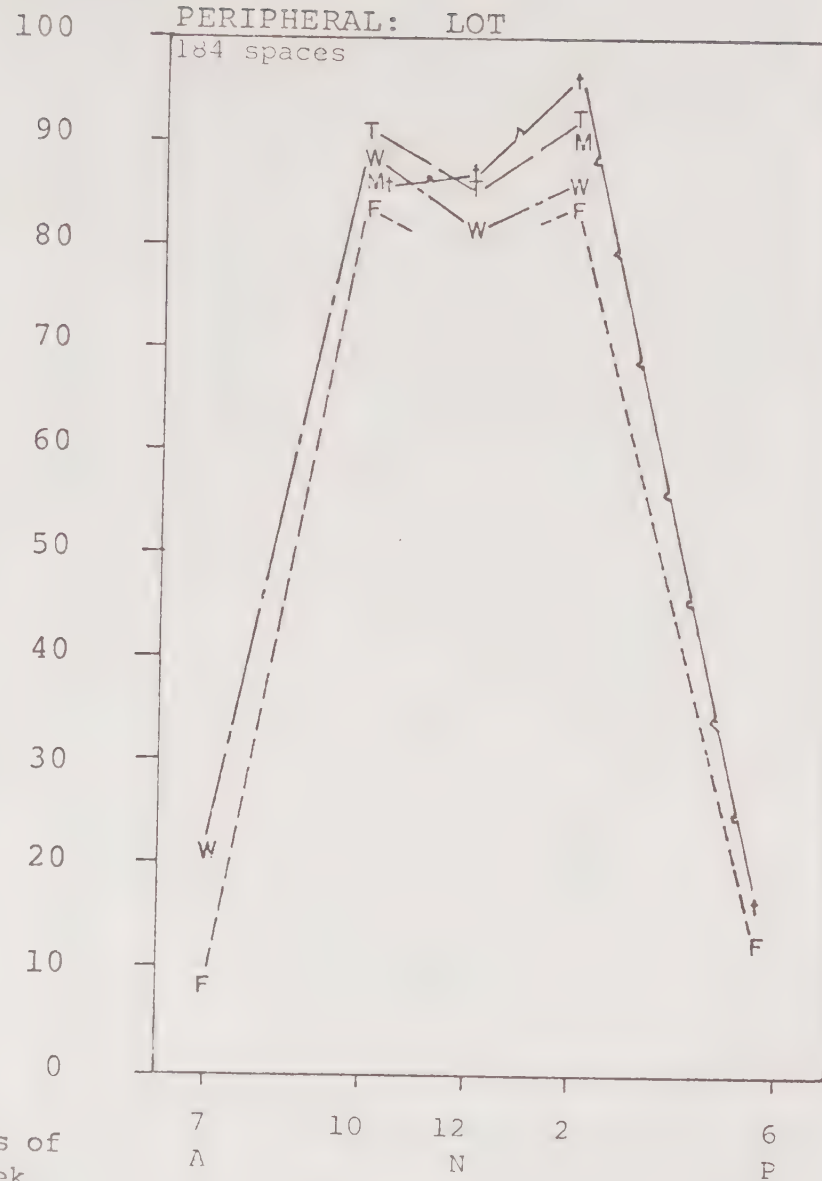
Days of
Week

M - Monday
 T - Tuesday
 W - Wednesday
 t - Thursday
 F - Friday

Percent

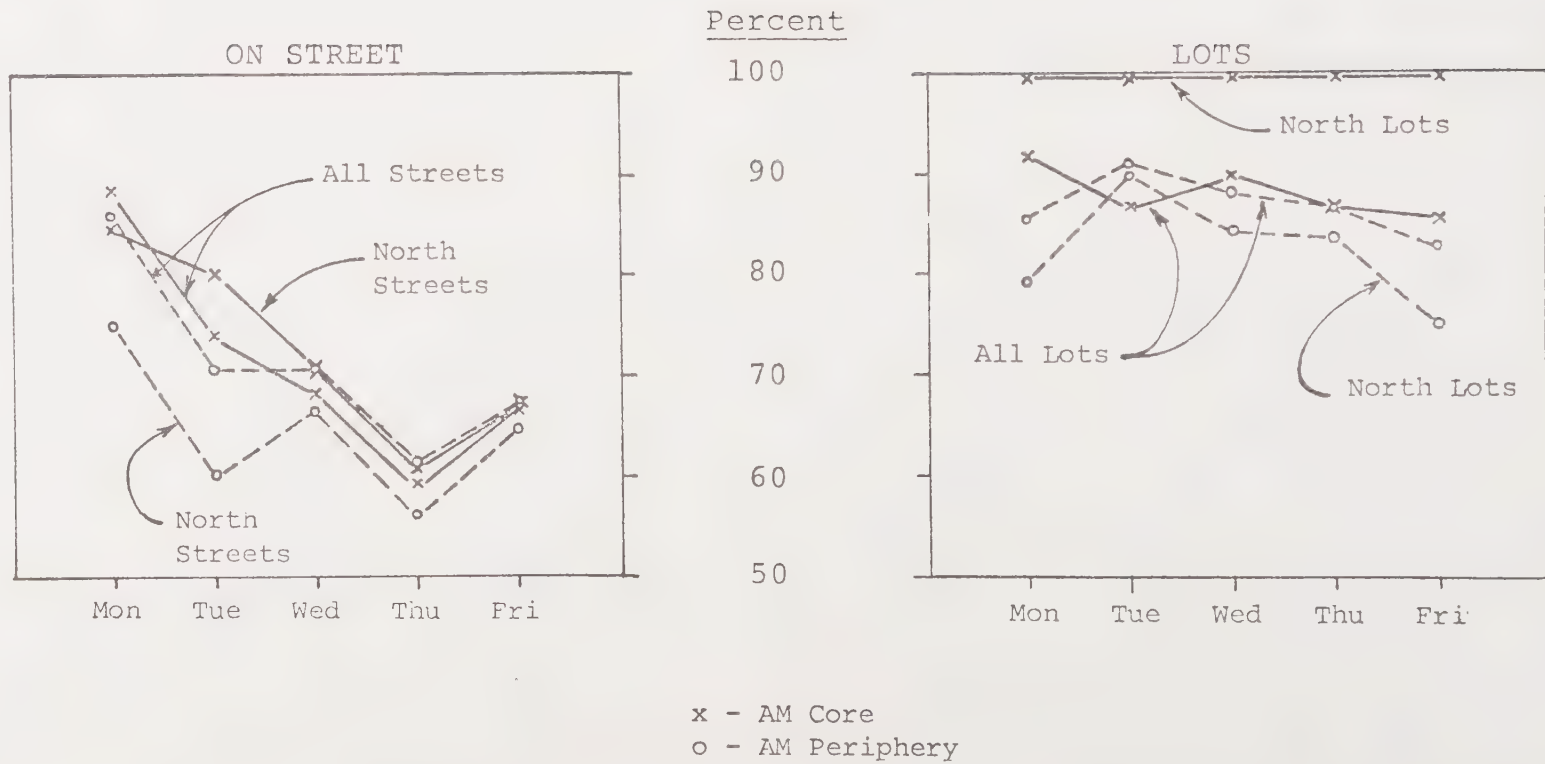
PERIPHERAL: LOT

184 spaces



DAILY VARIATION IN MID-MORNING UTILIZATION

Figure 4-16



the threshold of a shortage situation.^{12 13} At utilization rates greater than 85% arriving vehicles will have to hunt for the available space and may divert to other locations where there is greater probability of space being open. This will occur even if such space is relatively less accessible to the final trip destination. Short term parking requires a greater margin for demand fluctuation and a high probability of space available to attract users. Conversely, higher turnover rates of short term parking limit the utilization, as measured by space availability at a given time, that may be achieved.

Limits on off-street parking depend on the type of parking involved. Short term, high turnover parking has the same characteristics as street parking above. Longer term parking may achieve 90% to 95% utilization and maintain some turnover value.¹⁴ Parking utilization in excess of 100% (more vehicles in lots than designated spaces) has been observed in high demand long term parking situations associated primarily with employee or commuter parking.¹⁵ Such a high level of utilization implies essentially zero turnover in parking during the day however.

Assessment of the current parking surplus or deficiency was made assuming "optimum" utilization rates of 85% for on-street parking and 95% for parking lots. These are summarized below for the mid-morning peak accumulation period:

	<u>Monday</u>	<u>Average Over Week</u>
Core		
Lot ¹⁶	-36	-5
On-Street	-12	+50
Periphery		
Lot	+16	+15
On-Street	+41	+86
Total Spaces	+9	+146

The actual values above are less significant than the general inferences which may be drawn from them. These are small numbers compared to the 1,120 spaces in the core or the 1,720 total spaces.

Based on the numerical analysis of the parking survey and field observation, JHK finds present parking in the Civic Center area inadequate for the current Monday morning peak demand period. Parking in the core area is of marginal adequacy during the peak periods in the remainder of the week. These findings assume use of the optimum utilization rates. Improved lots in the core are generally full however.

¹² Highway Research Board, Parking Principles, Special Report 125, Washington, D.C. 1971 pages 17-18.

¹³ Wilbur Smith and Associates, Parking in the City Center, New Haven, Conn. May 1965. pg. 14.

¹⁴ Ibid.

¹⁵ JHK & Associates, Santa Ana Parking and Circulation Study, San Francisco, Sept. 1976.

¹⁶ Without 60 space dirt lot east of Pine Street between Green and Thompson Streets. Including this lot yields values of +21 and +52.

Extension of parking into the periphery is significantly greater on Monday compared to the remainder of the week. This was particularly noticeable in the southeast portion along Willow, Green and Mellus Streets. The southerly portion of Las Juntas Street was also heavily utilized. Use of these areas for overflow parking was also observed in the 1975 County survey.

County employee parking is currently infringing on areas designated for short term parking. This was observed in the 2 hour time limit zones near the Administration Building and in the City parking lot (also 2 hour limit) located on the southwest corner of the Ward Street - Las Juntas Street intersection. The time limit parking near the Administration Building is appropriately situated for short term use by persons with business in the Civic Center and should be reserved for their use.

With respect to the City parking lots the situation is less clean-cut. An effect of the westward expansion of County facilities into the downtown area has been a reduction in available short term parking in the commercial area. The City lot located on the southeast corner of Marina Vista and Ferry Street is approximately half reserved. 25% of the total spaces are reserved for Community College District staff employed at the adjacent Gordon Education Center. County employees located in facilities on Main Street and on Green Street are parking in the City lot at Ward and Las Juntas Streets. The replacement of commercial establishments by County offices may have altered the demand for parking in the downtown area to the extent that this replacement of short term parking by long term parking is appropriate. There is insufficient information presently available to make that determination.

Congestion and Delay

Analysis of current congestion and delay factors was performed for the streets in the Civic Center area and the major arterial streets connecting the Civic Center to the regional highway facilities. In general peak traffic volumes are well within the capacities of the various highway facilities. Various levels of congestion and delay are experienced however. These are addressed individually with the facilities below.

Traffic movement on Alhambra Avenue is relatively free flowing, even in the peak period. Most of the congestion and delay experienced along this corridor occurs to vehicles attempting to turn left into or across Alhambra Avenue, particularly south of Arch Street where simultaneous north and southbound gaps are necessary to cross. Maximum side street delay occurs during the AM peak on the eastbound off-ramp from S.R.4. Congestion at the Alhambra Avenue - S.R.4 ramp intersection is prompting some vehicles bound for the Civic Center to divert to Howe Road, where the ramp terminals are signalized. The Howe Road - Pacheco Boulevard intersection is also signalized allowing for a relatively easy left turn towards central Martinez. North of Arch Street turning and crossing movements are eased by the one-way flow and lower volumes.

Pacheco Boulevard is carrying substantial peak hour traffic volumes, for a two lane facility, east of Howe Road. The relatively few intersections along this section aid in keeping the flow smooth, however

congestion frequently develops as vehicles queue behind others waiting to turn left from Pacheco Boulevard. Pavement widening and channelization have been installed at Morello Avenue, the major intersection along this portion of Pacheco Boulevard, to ease through vehicle movement. Volumes are less west of Howe Road, however geometric constraints near Palm and Shell Avenues adversely affect the smoothness of flow. Capacity of this section is also affected by vehicles turning from Pacheco Boulevard. As with Alhambra Avenue, side street delays may be encountered during peak periods.

Traffic volumes on Marina Vista are well below the capacity of this four lane street. Congestion and delay are associated primarily with the curved alignment east of Escobar Street, truck movement into and out of the Shell Oil loading area and railroad activity at the grade crossing immediately west of Shell Avenue. Interference from the latter two areas is rare. The severe alignment reduces speeds along this section but has little effect on capacity.

Present peak hour traffic volumes in the Civic Center area are below street capacities. Congestion and delay are associated primarily with parking maneuvers and conflicting vehicle or pedestrian streams. These are characteristic of streets in central business districts in general and occur throughout the day. They rarely involve more than two or three vehicles. Peak congestion and delay is associated with simultaneous large conflicting vehicle and pedestrian movements through controlled intersections. Those movements facing stop signs are delayed, the uncontrolled movements flow relatively freely.

Short term congestion and queuing occur at the height of the P.M. peak period (approximately 5:00 p.m.) with occasional jamming of intersections on Pine Street south of Escobar Street by northbound vehicles. Such conditions rarely last for more than ten minutes however. This transient congestion is caused by the sudden release of a large number of employees at one time. The intersection approach currently experiencing the greatest delays and queue length buildup is northbound Pine Street at Escobar Street. At this intersection Pine Street is stopped, Escobar Street is uncontrolled. The major movement from Pine Street is the northbound to eastbound right turn. At this location the right turn requires a longer than typical gap in opposing flow (eastbound through on Escobar Street) to be accomplished comfortably because of the uphill grade east of Pine on Escobar. The heavy pedestrian movements here during the peak (hourly rate 430 east-west and north-south) also adds to the delay.

Short queues approaching Pine Street develop on the east-west streets south of Escobar Street as the parking lots empty. These clear very rapidly. Queues also develop on Green Street and Ward Street westbound at Alhambra Avenue, again due primarily to the traffic control. Outbound movement on the major arterials is relatively free flowing. There is little delay once vehicles access the arterial system. In general, what little peak congestion exists is related primarily to the concentration of traffic activity in a short period of time over a small area. The level of delay experienced is minimal, involving a small number of intersections. Overall there is no significant traffic problem in the Civic Center at present.

FUTURE CONDITIONS

This section of the report addresses the anticipated circulation system, traffic and parking conditions in the year 1980. It considers the base situation (no project alternative) and the effect of the various project alternates. Trip generation of the completed project is defined from the project descriptions contained in Chapter 3. Interim conditions ascribed to construction activity are also addressed here. The material is presented in the same order as the preceding section on existing conditions. A summary of project impacts is contained in Chapter 6 of this report.

Circulation and Access Systems

No major changes in the Civic Center circulation and access system beyond those embodied in specific project alternates are contemplated by 1980. Improvements or revisions are limited to the installation of additional traffic control devices. The current (76-77) capital improvement program of the City contains provision for the installation of two traffic signals on Alhambra Avenue; one at "D" Street (Shell Avenue) and one at Alhambra Way. CALTRANS has tentatively programmed signalization of the south ramps of the Alhambra Avenue - S.R.4 interchange for the 77-78 fiscal year. Installation of these three traffic signals will reduce side street delay entering Alhambra Avenue through the creation of periodic gaps¹⁷ in the traffic stream of sufficient duration to allow ample opportunity for turning or crossing maneuvers. Driver confusion or impatience should also be reduced, along with right-angle accident experience, at the signalized locations. Average travel times along Alhambra Avenue will increase however. This may divert more vehicles to the Howe Road interchange.

Street closures and additions under each alternate were described in Chapter 3. These are shown on Figure 4-22 through 4-24 for Alternates A - C and Figures 4-26, 4-27 for Alternates D and E under the section on traffic volumes ahead. System changes and possible effects on access are briefly described below for each alternate.

Alternates A and B

Under alternates A and B, Green Street and Thompson Street between Pine and Willow Streets are abandoned. Willow Street is extended north to Ward Street. These alternates have little effect on accessibility in the Civic Center area. The abandoned streets primarily served the residences located along them. The housing fronting these streets will be displaced by the Facility and adjacent parking. Access to the existing residences on Willow Street will be somewhat reduced by the street closures, however the extension of Willow Street to Ward Street continues full access from north and south. The remainder of the East Hillside neighborhood is unaffected as the major connections, Ward and Mellus Streets, remain.

¹⁷ Gap refers to the time or distance displacement between successive vehicles in a traffic stream.

Alternate C

Under this alternate Green Street between Court and Pine and Thompson Street between Court and Willow Streets are abandoned. Access to the East Hillside area from Pine Street is relatively unaffected. Willow Street still has north and south access similar to the present. The closure of Green Street is of considerable import however, as this represents one quarter of the west to east streets through the central Martinez area. Ward Street will be subject to most of the through travel demand formerly using Green Street. There will be increased demands on Las Juntas, Mellus and Court Streets as local circulators and collectors of traffic from the residential area west of Court Street, vehicles using the street parking near the Facility and vehicles circulating around the Facility.

Alternate D

This alternate presents a significant change in circulation in the Civic Center area. Pine Street is diverted west to Court Street north of Mellus Street and the two block segment of Pine between Mellus and Green Streets is abandoned. Thompson Street between Court and Willow is also abandoned while Mellus Street and Thompson Street west of the diversion become cul-de-sacs. The through and most Civic Center traffic formerly on Pine Street will now be on Court Street while Pine Street will continue to provide access to the buildings and parking lots in the north and central area of the Civic Center. There will be a general increase in circulating traffic in and about the Civic Center as the principal access shifts to the west of the area compared to the present where it is basically split down the middle. East-west access remains relatively unaffected.

In addition to the horizontal alignment changes on Court Street, adjustment to the intersection grades, channelization and parking layout are included in Alternate D. These are in keeping with Court Streets change in function from local circulation and parking to arterial street status. The intersection grade adjustments, particularly at Ward Street, are to improve sight distance and safety at the intersections. Similarly, intersection channelization and elimination of angle parking on at least the east side of the street are commensurate with safe operation at increased traffic demand.

Along with the above, traffic control similar to what now exists along Pine Street would be instituted, i.e., all east-west streets would stop at Court Street. This includes extending stop control to Escobar Street where three-way stop is contemplated. Escobar Street east of Court Street would become one-way eastbound. Existing control along Pine Street would remain except at Green Street where it seems desirable to stop Pine Street and allow Green Street to be through.

Alternate E

Alternate E proposes the greatest change in street patterns of the five alternates. It incorporates the east-west impacts of Alternate C with the north-south traffic effects of Alternate D. As in D; Pine Street is diverted to Court Street at Mellus Street; north of Mellus, Pine Street is abandoned to Ward Street. Green Street and Thompson

Street are abandoned between Court and Willow Streets. West of the diversion, Mellus and Thompson Streets terminate in cul-de-sacs.

Through trip diversion from Green to Ward Streets is less under this alternate than C since Court Street is now the north-south through facility. Most Civic Center traffic will divert to Ward Street as it provides access to the major parking, which is east of Pine Street. The Pine Street - Court Street traffic situation will be similar to D. Traffic circulation in and around the Civic Center will increase as discussed under D.

Changes in traffic control, grades, channelization, and parking will follow that proposed under D. Due to the street closures Pine Street will be stopped at Ward Street while Ward Street becomes the through link from Court Street to the parking area. Traffic control along Court Street will follow that proposed above. It may be desirable to consider a four-way stop at Court and Ward Streets. Total peak volumes at this location indicate that it may be necessary to control Court Street to ensure sufficient gaps for crossing or turning traffic on Ward Street.

Beyond 1980 there are two probable changes in the present circulation system which have potential impact on Civic Center access. These are the extensions of Pine Street to the south, and the widening of Pacheco Boulevard east of Shell Avenue. The Pine Street extension was at one time intended to be a major four lane connector between the Civic Center area and S.R.4.¹⁸ Since then the facility has been scaled back substantially to make it compatible with the existing Pine Street width and alignment. It is being constructed in stages as development fills in between Shell Avenue and S.R.4. Eventually Pine Street will be a continuous route from downtown to S.R.4 at the Howe Road interchange. While it will not be a significant through route it should provide some relief to Pacheco Boulevard and Alhambra Avenue with respect to providing an alternative north-south route for the growing residential area north of S.R.4.

The widening of Pacheco Boulevard has been pursued for many years as new developments have been required to construct their frontage improvements at the ultimate width required by a high level four lane arterial street. The pace of this type of improvement is dependent on the rate at which new development or replacement of existing development occurs. Eventually a sufficient amount of the widening will have been accomplished by private interests for the County to complete the project by connecting the improved portions between Shell Avenue and Arthur Road. No improvement of the City portion (west of Shell Avenue) is presently contemplated.

Increased transit access to the Civic Center will probably occur, however there are no firm dates. Increased service frequency on the BART express bus is dependent to an extent on patronage experience with the present service. Any extension of service hours or weekend operation is dependent on an extension of the BART rail operating periods. Provision of local transit service in Martinez and the adjacent unin-

¹⁸ Contra Costa County, Contra Costa County Land Use And Circulation Plan - 1985, Martinez 1963.

corporated area is possible through joint City - County effort. Such has occurred in the northwest portion of the County, East County and the Orinda - Moraga - Lafayette area.

Traffic Volumes

1980 traffic volume growth is composed of three elements as described in Chapter 3, continued growth in Civic Center and adjacent area traffic activity, new traffic generating activity in the central Martinez area, and traffic generated by the proposed project. Construction of the Detention Facility will also entail an increase in traffic activity in the Civic Center area. Background and facility related traffic are discussed in detail in the rest of this section.

Background Traffic Volumes

Growth in traffic volumes in the Civic Center area, with no additions in facilities is estimated to be ten percent by the year 1980. Along with the ten percent growth the future distribution of traffic on the streets in the Civic Center is expected to remain similar to the present. Therefore, the background forecast in the Civic Center area is basically a straight line extrapolation of existing traffic volumes. Volume increases on the outlying arterials are estimated at five percent.

Additional traffic generating activity that may not be accounted for in the above increase is traffic to the Waterfront Park area. The average weekday trip rate observed by CALTRANS¹⁹ was 4.8 trip ends²⁰ per berth for well developed marinas incorporating the type of activities proposed for Martinez. Assuming the dry storage generates trips at the same rate, approximately 300 new trip ends a day may be attributed to the additional boat storage. The number of additional trips generated by the increased attractiveness of the existing area is estimated to be 300 also. This gives a total weekday increase of 600. Peak hour occurs between 12:00 and 1:00 p.m. and constitutes 10 to 15% of the daily traffic. Peak generation is therefore 60 to 90 trip ends. Trip activity during the AM and PM commute periods is much lower.

Not all of these new marina trips will originate outside of the area. Many will probably be County employees using the waterfront facilities during the noon period. Overall 500 trips are distributed over the arterial system. The distribution of marina traffic is more heavily oriented to Marina Vista than is total daily traffic.

Estimated twenty-four hour traffic volumes for 1980 are shown on Figures 4-17 and 4-18. PM peak hour volume estimates are shown on Figures 4-19 and 4-20. These constitute the "no project" alternate forecast. They also form this background base against which the Detention

¹⁹ CALTRANS District 4, 10th Progress Report on Trip Ends Generation Research Counts, San Francisco, July 1975. Tables 22 a,b,c.

²⁰ A trip end is a trip origin or destination occurring within the area studied.



Figure 4-17
1980 NO PROJECT DAILY VOLUMES
jhk & associates
1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET



Figure 4-18
1980 NO PROJECT DAILY VOLUMES

ibk & associates

1-14-77





Figure 4-19
 1980 NO PROJECT P.M. PEAK VOLUMES
 jhk & associates
 1-14-77

Figure 4-20
1980 NO PROJECT P.M. PEAK VOLUMES

jhk & associates

1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET



Facility traffic generation and traffic diversion will be examined.

Detention Facility Trip Generation

Trip generation of the proposed project is based on estimates of person trip activity at the new facility. This includes employees, official visitors (attorneys, bail bondsmen, investigators) and unofficial visitors (families and friends, clergy). Person trip estimates were prepared by JHK from staffing, visitor and parking data contained in Chapters VII and VIII of the Service Program report. Based on staffing and prisoner ratios between the proposed and existing facilities the added increment of trip activity was identified. Trip making activity of the two courts was estimated in a similar manner, however it was considered to represent all new activity. Trip generation of the detention center and court elements of the Detention Facility is summarized in Table 4-1. Trip generation is constant between the different alternates.

Official visitor trips to the detention center require adjustment prior to assignment to the street network. In the Service Program report official visitors were treated as other visitors with respect to parking requirements and auto occupancy. Many of the official visitors are already located in Martinez however. The Public Defender District Attorney, and many bailbondsmen are within two blocks of the Courthouse. Trips to the Detention Facility by persons from these offices will not appear on the arterial streets. They would probably not be auto trips at all. Prior to assigning trips to the street network official visitor trips were reduced by around 40% to reflect the proximity of origins and destinations. All other trips were assumed to have one end outside the central Martinez area.

Peak hour (P.M.) traffic is composed primarily of employee trips. A small increment of visitor traffic was included, around 6% for the Detention Facility and 7% for the courts. P.M. peak hour trip generation is 21% of the daily total.

The proposed Superior Courts building to be constructed following the Detention Facility will house four Superior Court departments. Such a project implies up to a 40% increase in court related activity in the Civic Center area. If this increase affects all phases of court activity the implications with respect to peak parking demand are considerable. Going from a 180 to a 250 person jury selection pool translates directly to an additional peak parking demand of 70 spaces in addition to whatever is required for judges and other court staff and persons with business before the Court, (up to 40 spaces). With respect to traffic volume the maximum anticipated increase would be in the range of 400 to 500 vehicles per day total, distributed over the arterial streets in proportion to present traffic volume variation. These traffic and parking estimates are informational only. The Court project is not well enough defined at the present time to allow incorporation into the analysis contained in this report. The traffic volume and parking discussions below relate to the background traffic and the Detention Facility only.

Table 4-1
DETENTION FACILITY WEEKDAY
TRIP GENERATION SUMMARY

<u>Element</u>	<u>Persons</u>	<u>Person Trips</u>	<u>Occupancy Factor</u>	<u>Auto Trips</u>
Detention Center				
Day Staff	44	88	1.2	73
Swing Staff	28	56	1.2	47
Night Staff	14	28	1.2	23
Total Staff (typical weekday)	86	172	1.2	143
Transportation Staff (day only)	22	44	1.2	37
Subtotal				180
Official Visitors	50	100	1.1	90 (50)
Unofficial Visitors	90	180	1.1	160
Subtotal				250 (210)
TOTAL				430 (390)
() with locality adjustment				
Municipal Court				
Judge & Staff	10	20	1.0	20
Persons in Court*	80	160	1.1	150
Subtotal				170
Superior Court				
Judge & Staff	5	10	1.0	10
Persons in Court*	30	60	1.1	50
Subtotal				60
* excludes Public Defender, District Attorney, Detainees				
<u>Incremental Increase</u>				
Daily Traffic Generation				
Detention Center				200
Courts				230
TOTAL				430
P.M. Peak Hour				
Detention Center				60
Courts				30
TOTAL				90

Sources: Detention Facility Service Program Report, chaps. VII & VIII, November 1976.
Draft Environmental Impact Report, Criminal Justice Detention Facility, Appendix B, January 1975.
JHK & Associates

Traffic Volumes - Detention Facility

The proposed project affects traffic volumes in the Civic Center area in two ways. The first is the addition of new trips to the street network, as discussed previously. The second is the diversion of background volumes to new routes in response to changes in street alignment and parking lot locations. Both factors are incorporated in the 1980 traffic volumes contained in this section of the report. Traffic volumes on the outlying arterials have been combined into single figures where the volumes do not vary between alternates.

Typical twenty-four hour 1980 weekday volumes on the outlying arterials for Alternates A, B, and C are shown on Figure 4-21. Central area volumes for Alternate A are on Figure 4-22, Alternate B on Figure 4-23 and Alternate C on Figure 4-24. Outlying volumes for Alternates D and E are shown on Figure 4-25, central area volumes are on Figures 4-26 and 4-27 respectively.

P.M. peak hour volumes are typically the highest, as was shown for the existing traffic. 1980 P.M. peak hour estimates were prepared for each alternate. Arterial volumes for Alternates A, B, and C are shown on Figure 4-28. Central area volumes for Alternates A and B are shown on Figure 4-29. Central volumes for Alternate C are on Figure 4-30. Alternates D and E are shown on Figure 4-31, central volumes on 4-32.

1980 traffic volumes on the outlying arterial approaches to the Civic Center vary little between the base condition (no project) and Alternates A, B, and C. The 430 total new trips generated by the Detention Facility project, when distributed over the three major arterials, have less effect than the plus or minus 5% random daily variation typical in the area. Total Detention Facility traffic amounts to 1% (one percent) of the daily traffic on the arterial streets on the outskirts of the Central area. Alternates D and E show a greater variation in daily traffic along Marina Vista and Pacheco Boulevard. This is due to a slight shift in both Detention Facility and background traffic away from Pacheco to Marina Vista. Relative parking lot accessibility from the north is enhanced under these alternates compared to A, B, and C. The shift in volumes reflects the less convenient access to the parking areas from Court Street.

Central area daily volumes for Alternates A, B, and C show increases on the streets providing access and circulation to and around the new parking areas. There is also an increase in circulating traffic related to persons locating facilities in the expanded Civic Center complex. Street closures also add to the volume of circulating traffic as turning opportunities are fewer. Under Alternate C a substantial shift in volume (approximately 2,500 vehicles a day) occurs from Green to Ward Street in response to the closure of Green Street at Court Street. Volume shifts are even more pronounced on Alternates D and E. In addition to the Marina Vista - Pacheco Boulevard shift the diversion of Pine Street to Court Street increases Court Street volumes by as much as 7,600 vehicles south of Green Street. The incremental increase is progressively less moving north on Court Street to Marina Vista where it is 1,200 vehicles. Pine Street volumes are composed of vehicles accessing the parking areas and the major buildings. There is also a greater amount of circulating traffic under Alternates D and E.

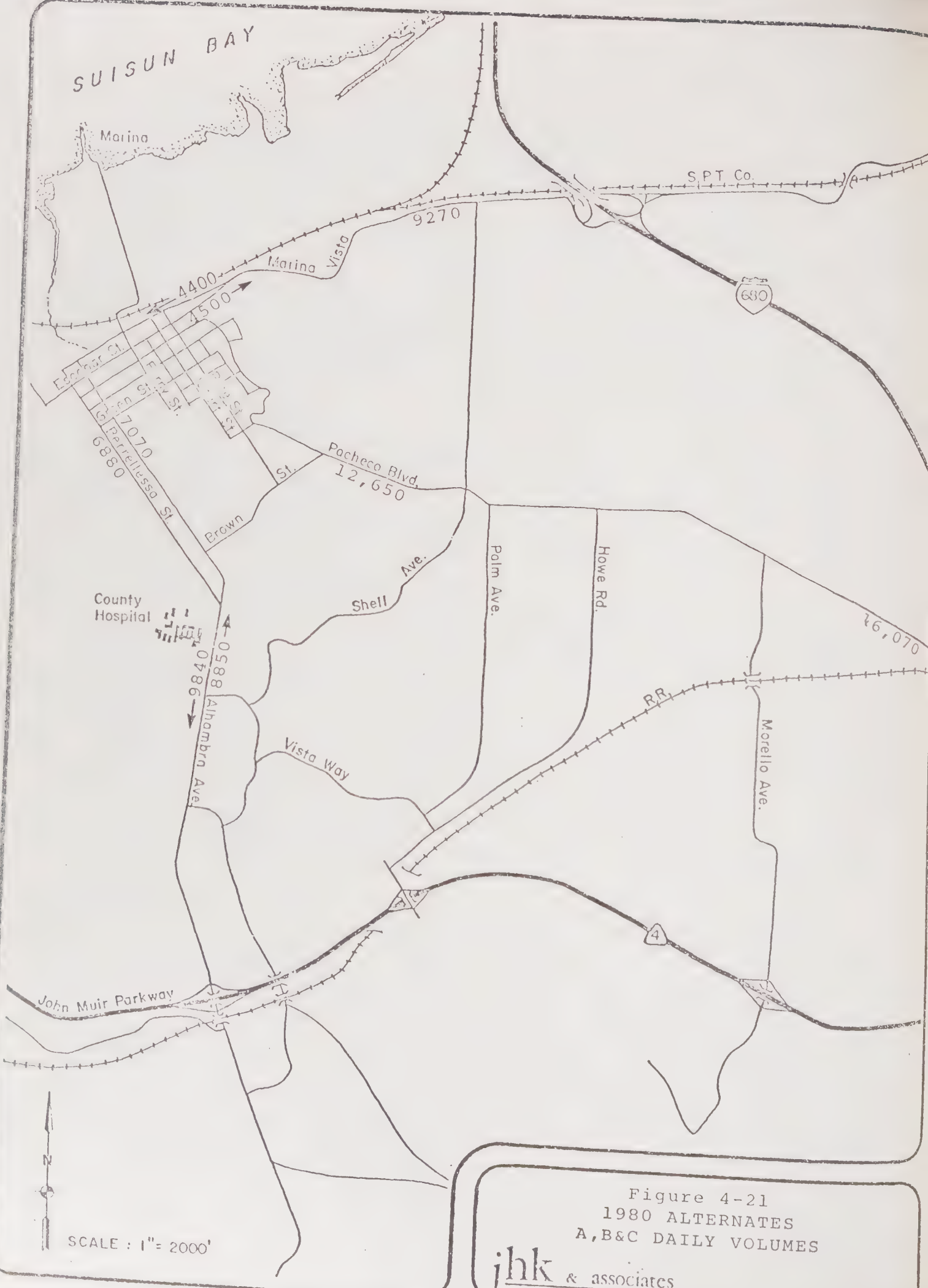


Figure 4-21
1980 ALTERNATES
A,B&C DAILY VOLUMES

jhk & associates

1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET



Figure 4-22

1980 ALTERNATE A DAILY VOLUMES

jhk & associates

1-14-77



Figure 4-23

ALTERNATE B DAILY VOLUMES

ink & ASSOCIATES

1-14-77



0 100 200
APPROXIMATE SCALE
IN FEET



Figure 4-24

1980 ALTERNATE C DAILY VOLUMES

jhk & associates

1-14-77

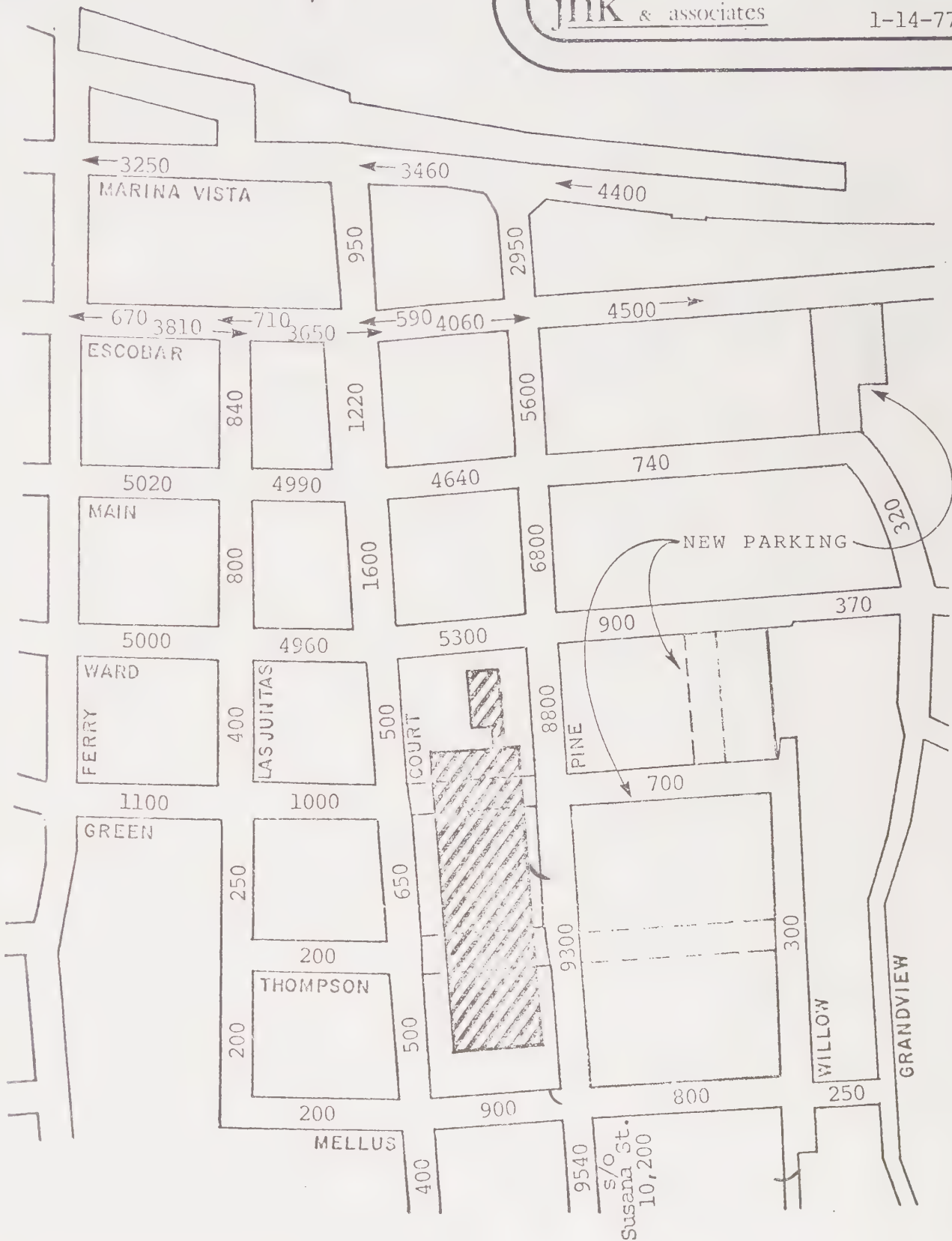




Figure 4-25
1980 ALTERNATES
D&E DAILY VOLUMES

jhk & associates

1-14-77

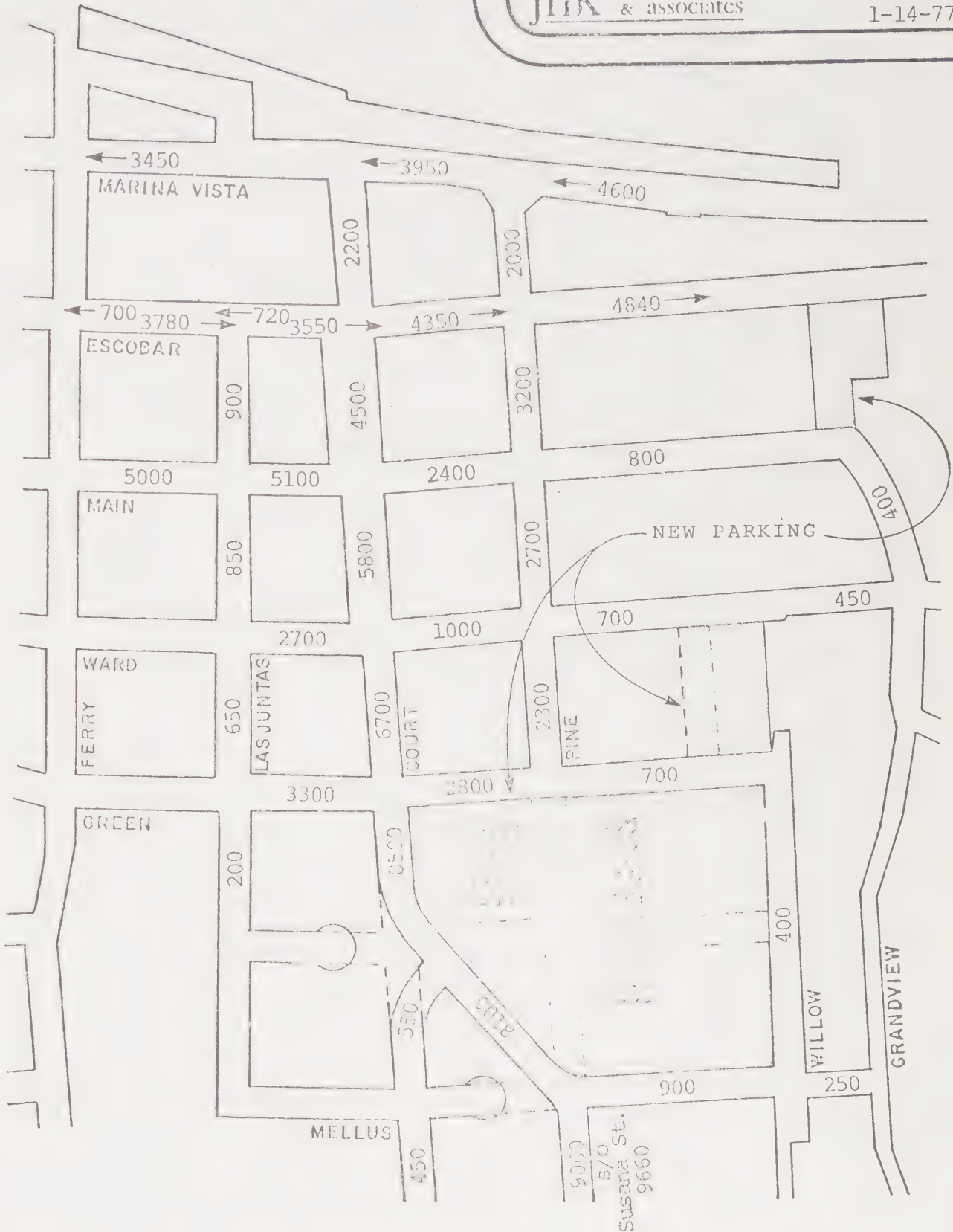
Figure 4-26

1980 ALTERNATE D DAILY VOLUMES

jhk & associates

1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET



0 100 200
APPROXIMATE SCALE
IN FEET



Figure 4-27
1980 ALTERNATE E DAILY VOLUME

jhk & associates

1-14-77





Figure 4-28
1980 ALTERNATES
A, B & C P.M. PEAK VOLUMES.

jhk & associates

1-14-77

Figure 4-29

1980 ALTERNATES
A&B P.M. PEAK VOLUMES

jhk & associates

1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET



Figure 4-30

1980 ALTERNATE C P.M. PEAK VOLUME

jhk & associates

1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET



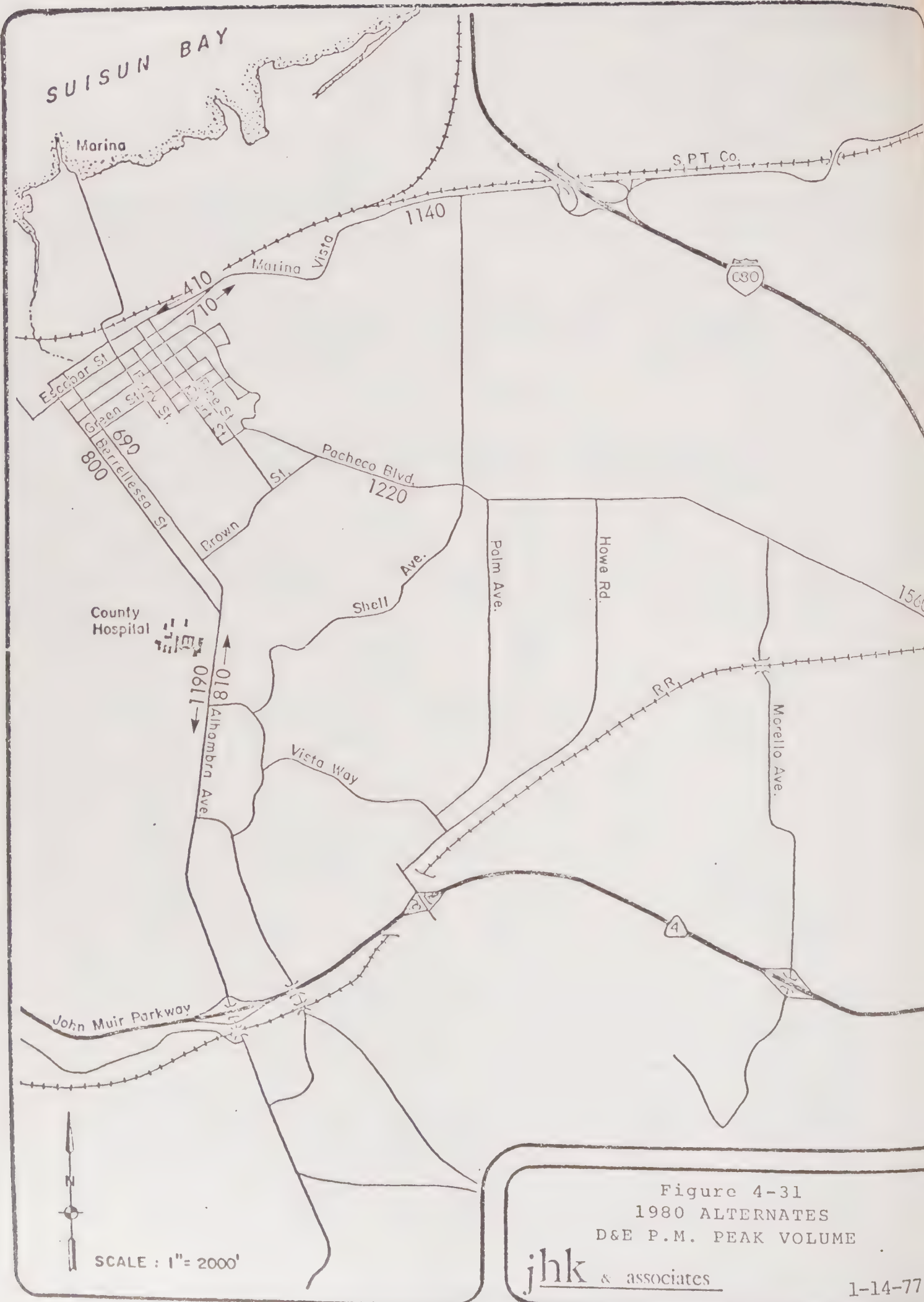


Figure 4-31
1980 ALTERNATES
D&E P.M. PEAK VOLUME

jhk & associates

1-14-77

Figure 4-32
1980 ALTERNATES
D&E P.M. PEAK VOLUME

jhk & associates

1-14-77

0 100 200
APPROXIMATE SCALE
IN FEET



(xx) alternative E



Detention Facility traffic is a greater proportion of P.M. peak hour traffic than daily traffic, comprising around 2% of the total arterial street volume. This is consistent with the high peaking factor estimated for the detention center where the day, swing and transportation staff are traveling to or from the Facility in the same hour. The total generated volume is still only 90 vehicles however. As with the daily traffic volumes changes in circulation pattern induced by street closures and parking relocations have a much greater effect on traffic volumes over individual street segments. Peak hour traffic volume changes follow the same basic patterns as daily traffic variations.

Pedestrian flow orientation will continue to lie between the parking lots and the major building complex in the A.M. and P.M. peak periods and between the major buildings and the downtown commercial area at noon. The peak period flow patterns will shift between alternatives reflecting the relative positions of the major parking facilities.

Alternates A and B maintain the present flow pattern. Volumes on Pine Street will increase and extend further south. Crossing volumes will also increase, however the relative volume patterns will be similar to today's. Alternate C will create a substantial change in peak period patterns. There will be a great increase (up to 300 persons) in pedestrian flow across Pine Street south of Main. This will conflict with the vehicular traffic volume on Pine Street.

Alternates D and E will also have an effect on pedestrian flow patterns, however the major peak movements will continue to be north-south, parallel to the major vehicular flows. Conflict points will be at Green Street and Ward Street as pedestrians cross the path of vehicles accessing the parking area. This will be a particularly important factor with Alternate E since Ward will be the major east-west street providing access to the parking areas. There is substantially less vehicle-pedestrian conflict in the four block complex area centered on Main and Pine Streets with these alternates. Most noon flow between the Civic Center and downtown must cross Court Street, the new north-south through route, however.

The 1980 vehicle traffic estimates assume continuation of present vehicle occupancy ratios. These were also used in preparing the vehicle trip generation estimates for the Detention Facility. Once construction activity is completed the proportion of trucks and buses in the traffic stream should also be similar to the present. Construction effects are discussed separately below.

Construction Period Traffic

Construction activity on a project of this magnitude will generate appreciable traffic in the Civic Center area. Traffic to the construction site is composed of construction employees and material shipments. The peak employment period will be during the first phase of the project when 150 workers will be on site for three months. Major material handling will also commence during this phase and extend over a six to nine month period. During the heavy haul period approximately 40 single unit (mainly transit mix concrete) and 4 semitrailer (reinforcing

teel) trucks will arrive at the site daily. Construction activity will begin at 8:00 A.M. and end at 4:30 P.M. Only one shift is anticipated.²¹

Vehicle trip generation is estimated at 2 trip ends per worker plus 10% for construction supervision and inspection activities. This gives a total of 330 auto trips. Truck trips will total around 90. Total vehicle generation is therefore approximately 420 a day, comparable to the 430 total trips estimated for the completed facility in 1980. Traffic impacts will be greater however as trucks have the effect of a number of automobiles, depending on speed, grades and passing opportunities.

Peak hour volume will be greater than post-completion. As all employees will be arriving at one time the peak hour volume will be 150 vehicles, or 60 above 1980 values. The peak construction period will occur late in 1977 however, therefore background volumes will be 6% to 8% less. The total peak hour volumes will be less than the 1980 no project peak volume. This assumes construction worker traffic follows the same distribution as Civic Center employee traffic. This assumption is valid if construction parking is located near the Civic Center, however there are problems with this as discussed below under parking. Parking locations other than the Civic Center do not imply a greater impact, only a shift in volume distribution. The worst case assumes all construction traffic will be on a single access arterial. The effect of such a distribution is discussed under congestion and delay further below.

Vehicle Miles of Travel

The projected 1980 traffic growth rate in the Civic Center area was 10% independent of the Detention Facility, while outlying area arterials were estimated to grow at 5%. Weighting major and minor street VMT by estimated growth rates produced a 1980 background VMT estimate of 117,000, plus or minus 25,000 as in the current estimate. Project generated VMT within the impact area is composed of two parts, new trips generated by the Facility and longer trip lengths induced by changes in circulation patterns. At the level of precision appropriate for the impact area assessment there is no significant difference between alternates. Vehicle miles of travel for Facility generated traffic is approximately 550, induced VMT is around 200. Total 1980 daily VMT with any Detention Facility alternate is therefore 118,000, rounding to the nearest significant digit, plus or minus 25,000. This amounts to an increase of less than 1%.

Vehicle miles of travel within the Civic Center cordon may be estimated with precision. VMT estimates were developed from the central area daily traffic volumes shown previously and block length measurements obtained from 1:720 scale aerial photo maps. The resulting 1980 VMT estimate for the no project case and each alternate are summarized

²¹ Construction activity data from John Harkin, Contra Costa County Public Works Department.

below:

<u>NO</u> <u>PROJECT</u>	<u>A</u>	<u>B</u>	<u>ALTERNATE</u> <u>C</u>	<u>D</u>	<u>E</u>	<u>E-1</u>
4,208	4,267	4,303	4,399	4,313	4,429	4,404

Since there will be no east or west side access to the large (three blocks long) parking lots included in Alternates B, E, and E-1, a large amount of circulation volume present on the streets under other alternates will not be accounted for. Therefore, an adjustment for internal VMT was made for these alternates based on the parking lot capacity, estimated turnover, and parking lot length. The adjustment is included in the figures shown above.

As expected, the VMT estimates for the Civic Center area clearly illustrate the effects of the longer travel distances required to reach the parking facilities under alternates E and E-1. The more circuitous travel produced by street closures is also shown. The relatively small effect of new traffic generated by the Detention Facility is illustrated by the difference between the no project case and Alternate A. The increase in VMT amounts to just over 1%. This is similar to the result obtained for the VMT impact area as a whole.

The daily vehicle miles of travel generated during the Facility's peak construction period depends on the assumed distribution of construction traffic entering the impact area. The range in estimates varies from 160 (all on Marina Vista) to 955 (all on Alhambra Avenue). A reasonable expected value based on current distribution patterns, weighted somewhat toward Marina Vista to reflect truck traffic, is 500 daily vehicle miles of travel.

Parking

A 10% increase in background traffic activity in the Civic Center area implies a 10% increase in parking demand. As was shown in the discussion of existing conditions there is already a deficiency in off-street core spaces. A 10% increase in demand extends the deficiency to on-street core and off-street periphery parking. How the deficiency is aggregated depends to a great extent on what type of external limits are set on the parking supply, i.e., at what level does a problem exist? The periphery can just absorb a 10% increase in peak demand and remain within the optimum utilization limits (95% for lots, 85% for street). Limiting core parking to the optimum utilization requires the addition of 160 off-street spaces for the peak demand.

Average weekday demand may be accommodated using excess spaces (increment between demand and optimum) in the periphery and both core and periphery would be just within limits. This is not reasonable however since periphery parking will not be utilized extensively until severe pressure (95% or more) is put on core parking, as happens presently in the peak period. To accommodate a 10% increase in average core demand wholly within the core area while meeting optimum utilization requires the addition of 50 off-street parking spaces. To accommodate all parking demand increase within the core (periphery parking

utilization not to exceed presently average) requires the addition of 90 off-street spaces for the average, and 260 for the peak. If peak periphery use is the same as today, off-street parking addition in the core may be lowered to 200 spaces. In assessing the no project alternative, there is more than enough space within the current Civic Center area to provide the additional spaces.

The discussion above is based on gross analysis of the core and periphery areas. The off-street parking in the north area of the Civic Center is essentially 100% utilized at present. It would probably remain at that level if even 300 spaces were added on the south side of the Civic Center area. Proximity of destination definitely affects the distribution of parking demand. The north parking areas are significantly closer to the major buildings than the improved lot southwest of the Pine and Green Street intersection. Turnover in parking is not directly assessed either. The relative distribution of long and short term parking facilities and demand must also be considered in assessing the adequacy of any parking improvement program. The above numbers may be used in assessing the general level of parking adequacy however.

The parking demand generated by the Detention Facility was assessed in the Detention Facility Service Program report.²² The total parking demand was estimated to be 268 spaces. Of this total 127 were determined to be additional demand, above that presently generated by the existing Jail and Courthouse. JHK also estimated parking demand from the trip generation data, finding an additional demand of 90 to 110 spaces. In keeping with the use of conservative estimates additional parking demand will be based on the Program report assessment of 127 spaces, rounded to 130.

The alternate Detention Facility proposals will have a substantial impact on parking supply location and off- and on-street distribution in the Civic Center area. There will be a gain of 200 to 300 off-street spaces with the construction of the Facility and an additional lot east of the motor pool. On-street parking has a net loss ranging from 18 to 120 spaces. A summary of parking supply variation is shown on Table 4-2. These parking allocations are the maximum that may be accommodated on the available spaces. Other design and aesthetic considerations may require a substantially lower proportion of area devoted to parking.

On-street losses are associated primarily with street closures, therefore occur near the location of the Facility and adjacent parking lots. Under Alternates D and E however, some loss is sustained along Court Street in the north portion of the Civic Center. These are mainly short term metered spaces. Loss of this space cannot be considered to be offset by gains in off-street parking three blocks away.

Comparison of supply and demand for the Detention Facility indicates that the total additional demand increment generated by the Facility can be met by all alternates, assuming 100% utilization of the total net gain. Overall, only Alternates A, B, and C provide

²² Chapter VII, particularly Tables VII-1 and VII-3.

Table 4-2

SUMMARY OF PARKING SUPPLY IMPACTS

	Detention Facility Alternate					
	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>	<u>E</u>	<u>E-1</u>
Off Street Removed	200	200	200	150	400	400
On Street Removed	58	58	18	130	200	200
Off Street Added	415	470	408	327	610	610
On Street Added	13	13	0	73	95	80
Gain (Loss) Off Street	215	270	280	177	210	210
Gain (Loss) On Street	(45)	(45)	(18)	(57)	(105)	(120)
Net Gain	170	225	190	120	105	90
Total Net Gain With 40 Space Lot East of Motor Pool	210	265	230	160	145	130

Source: Kaplan/McLaughlin, December 16, 1976.

major relief for the background parking deficiency discussed previously. Alternate E-1 provides only the increment of additional demand generated by the Facility. Alternates D and E do little better. As the proposed project uses all presently programmed space within the Civic Center area even the alternatives which will satisfy the average total demand in 1980 will be inadequate in 1985, based on the continuation of present parking efficiencies. Steps to increase supply through additional spaces and increased efficiency will have to be taken eventually. This is addressed further in Chapter 5.

Parking impacts during the construction period are difficult to quantify. Depending on the phasing of construction activities replacement parking may or may not be available prior to the disruption of existing parking supply. Alternates A, B, and C offer the best opportunities for constructing new parking facilities prior to removal of existing areas. Alternates D and E are limited to use of the area east and south of the structure as an initial replacement lot. In all cases there is sufficient space to phase the parking relocation.

In addition to the effects on supply, the construction period also effects demand. At the peak of the construction activity there will be an additional demand for 150 spaces away from the immediate project vicinity. Given the present parking situation such a demand increase represents the total reserve in the core and periphery on the average weekday. If construction employment parking is not provided outside the Civic Center area, parking infiltration will extend over another five to ten blocks around the Civic Center area. The impacts will be most acute in the residential area east of Pine Street where many streets are both narrow and steep. On jury selection days the area simply cannot accomodate the demand. Since prospective jurors will arrive after Civic Center and construction employees, available space will be in the fringe areas. Most of these persons will be unfamiliar with the central Martinez area, and will spend considerable time searching for the available space. Traffic volumes, congestion, and the incidence of illegal parking will all increase substantially.

Congestion and Delay

Congestion and delay factors pertaining to 1980 will generally represent continuation of the current situation. The estimated traffic volume increases will have little effect on traffic flow on the outlying arterials. Midday traffic operations in the Civic Center area generally will be similar to the present, with periodic delays encountered through turning or parking maneuvers. Peak period congestion patterns will show the same characteristics with queues on controlled intersection approaches. Relocation of the major flow patterns will involve congestion and queuing at more intersections than presently involved, however the underlying causation factors are the same. The congestion peak, now approximately ten minutes long, may extend to fifteen minutes. Substantial delay may be encountered in emptying the large parking lots, which has advantages and disadvantages with respect to traffic operations in the area. Specific areas and differences between alternates are addressed further below.

At the present time flow on the major arterials is relatively smooth with the exception of portions of Pacheco Boulevard mentioned previously.

The 1980 with and without project traffic volumes do not indicate any change in those flow characteristics. The street volumes remain well within the capacity of the arterial system. The installation of additional traffic control devices is of much greater significance with respect to delay on the major arterials. The three signals proposed for Alhambra Avenue, while enhancing access from the side streets, will significantly increase travel time and delay to vehicles on the arterial. This change in flow characteristics, which is not related to the future condition but rather presently perceived hazards, is greater than that which would be expected with the simple increase in traffic volume.

The intermittent flow interruptions on Pacheco Boulevard are related to the volume of left turns off Pacheco and the narrow pavement width in some locations. Left turn volume increases primarily with increasing development along Pacheco Boulevard, not increases in through traffic on Pacheco Boulevard itself. This is particularly true during the peak periods when Civic Center commute traffic occurs. The restriction due to width applies whether one vehicle or ten vehicles wait behind a left turning vehicle although increasing volumes increase the probability of a left turning vehicle being delayed. The Pacheco Boulevard improvements are being pursued on the basis of a long standing area-wide need. They will eventually be completed whether or not a new Detention Facility is constructed.

Peak period congestion under the 1980 no project alternate will occur in the same locations as present. Queue buildup and delay will be experienced on the controlled approaches to the through streets; Pine Street, Escobar Street, Alhambra Avenue and Berrellissa Street. The extent of congestion will be slightly greater than today, no significant problems are anticipated. Alternates A and B are basically the same as the no project alternative. There will be an increase in volume of 90 vehicles distributed over the street system in a pattern similar to the present. The extent of congestion and delay is the same as the no project alternate.

Alternate C differs from the 1980 no project case in two areas. The closure of Green Street shifts traffic to Ward Street. The Ward Street - Pine Street intersection will be the most heavily traversed in the Civic Center area during the peak hour. Both vehicle and pedestrian volumes will conflict at this intersection. Queue buildup may occur on the east leg of Ward Street to the extent that the driveway exits on the north side of the parking lot may be blocked. This would encourage vehicles to exit on Green and Mellus Streets, balancing the exit delay on the three streets. The second difference relates to the large number of vehicles exiting from the large parking lots on the east side of Pine Street. There will be some queuing inside the parking lots as vehicles merge into the three exit lanes.

With Alternate D the major intersection is Court Street and Green Street. While vehicle volume through this intersection is similar to the Ward - Pine intersection of Alternate C, congestion and delay will be less since there will be far fewer pedestrians at this intersection. Parking lot congestion will also be minor since there are fewer spaces and more exit routes available.

Alternate E embodies the greatest congestion and delay potential of the five alternates proposed. The intersection of Court and Ward Streets will experience the largest total entering vehicular volume. In addition, pedestrian volumes will be significant here, although substantially less than presently occurring at the major intersections (Main, Escobar, Marina Vista) on Pine Street. The congestion pattern encountered will depend to a great extent on the type of traffic control instituted at this intersection. With stop sign control solely on the Ward Street, Court Street flow will be relatively smooth. In fact, with the reduction in the number of intersections and adjacent on-street parking traffic flow will be somewhat better than occurs presently on Pine Street, even with a greater traffic volume. Queuing on Ward Street will extend through Pine Street to the parking lot exits however. This jammed condition will develop because of the very sharp peak demand within the P.M. peak hour, assuming continuation of present patterns.

The distribution of traffic demand among the approaches to this intersection is conducive to the installation of four-way stop control. Under this control option peak hour delay on Ward Street and Court Street would be evenly distributed, with shorter queues on Ward Street and concomitant longer queues on Court Street. This represents a major change in flow characteristics for Court Street compared to the free flowing condition pertaining to the uncontrolled case. Under four-way stop control, the 1980 P.M. peak hour volume will comprise approximately 70% of the intersection capacity. This is well within the range of stable flow and is an acceptable value for urban streets.^{2 3}

There will be a substantial amount of congestion and delay at the parking lot exits under this alternate. The new parking lot, which may have almost 600 spaces, will have access only at the north and south sides onto Ward and Mellus Streets respectively. The exit capacity will not be sufficient if the present peaking pattern pertains to 1980. Parking lot congestion has advantages and disadvantages. The advantage is that congestion within or exiting the lot limits the amount of traffic that can enter the street system at a given time, smoothing the fluctuations in peak demand. Excess demand is also retained in the lots, outside of the circulation system. A major disadvantage is the concentration of exhaust emissions in a confined area. Cold engines and high idling speeds produce relatively large amounts of carbon monoxide and hydrocarbons.

Construction traffic will not cause any significant congestion problem. A 4:30 quitting time places the 150 construction worker trips in the beginning of the peak hour. Queuing and delay does not develop in the Civic Center area until 5:00 p.m., when the construction peak will be long past. Truck traffic could induce congestion, however haul routes may be specified to avoid potential problem areas. Material handling in general around the site should not be any problem if properly scheduled to avoid peak periods.

^{2 3} Highway Capacity Manual, Tables 6, 8, and 10.13.

5. ALTERNATIVES AND MITIGATION MEASURES

This Chapter of the report addresses alternatives and mitigation measures to reduce impacts of the proposed project. The relative effects of project alternatives, both in the nature of the project and in its physical aspects, are assessed. Mitigation measures are described and assessed with respect to their anticipated efficacy in the Martinez area. As discussed in Chapter 3, alternatives and mitigation measures are not addressed in the level of detail used in presenting the project and describing its impacts.

ALTERNATIVE PROJECT PROPOSALS

Alternative project proposals may be considered as one of two classes; alternatives which locate the project outside the Civic Center area, or alternatives which reduce the scale of the project. The effect of either is to reduce traffic and parking impacts within the Civic Center.

Alternative locations move the traffic and parking demand to an area outside the Civic Center. The effect of such a move depends on the alternative Detention Facility site chosen. In general however, any move outside eliminates the benefits of having the courts, District Attorney, Public Defender and bailbondsmen in proximity to the Detention Facility. Vehicle trip generation would certainly be higher at such a site. There would still be an increment of traffic in the Civic Center as detainees are transported to and from the Courthouse. Accessibility of a remote site must also be considered. A site located outside or on the fringe of an urban area would probably have little or no problem with traffic congestion or parking demand. Conversely such a site may have no public transportation access at all. In general, an urban area may experience circulation and parking problems of equal or greater magnitude than those encountered in the central Martinez area. A rural area would not be accessible to persons without automobiles.

A smaller Facility would presumably have a lower level of trip generation, therefore a lower impact on circulation and parking. It is unlikely however that a smaller facility would be satisfactory with respect to meeting the projected need for the Facility. The current proposal has been subject to substantial study and review by the program and facility consultants, the County and the Detention Facility Advisory Committee. If a smaller facility were feasible, it probably would have been proposed.

ALTERNATIVE ACCESS PROPOSALS

There are two alternative access proposals worth considering. One is a major facility which has implications for long range access beyond 1980. The other is actually a series of minor revisions in the area of the Court Street - Mollus Street intersection. In looking at access alternatives it must be kept in mind that the schemes proposed as part of the five project alternates are adequate with respect to system capacity and that the more an alternative departs from the present street and flow patterns, the greater the impact associated with development of the alternative. The minimum impacts are associated with

Alternates A, B, and C which involve the least change in existing street patterns.

The major access alternative is the construction of Willow Street from Pacheco Boulevard north to Marina Vista or beyond. This facility was the major construction recommendation in the 1963 Traffic and Parking Study and still has merit as a long term project to provide a major south access to the Civic Center. This alternative provides the following benefits:

- Establishment of a full pedestrian Mall along Pine Street between Green or Ward Streets and Escobar Street.
- Elimination of the short radius "S" curve at Jones Street.
- Direct access between the major parking areas and the major north-south street without traversing the Civic Center complex area.
- Major north-south vehicle and east-west pedestrian movements are separated.
- A grade-separated railroad crossing connecting Pacheco Boulevard, Escobar Street and Marina Vista with the Waterfront Park is feasible (requires ramp structure to Marina Vista).

To complement this project Pacheco Boulevard between Shell Avenue (approximate limit of County four lane section) and Jones Street should be widened to four lanes.

This project has substantial impacts associated with it and should be considered a long range proposal feasible only if additional expansion of the Civic Center is to occur beyond the proposed Detention Facility project. Any serious consideration of this proposal should be made only in conjunction with an overall assessment of the future Civic Center function and physical form.

Minor variations involve the form of the connections to the Court Street - Pine Street diversion near Mellus and Thompson Streets. An alternative to continuing Court Street would be to terminate Court at Mellus, which would retain its status as a cul-de-sac west of Pine Street. Thompson Street would then intersect the diversion section on the west side. This scheme would allow access to Pine Street from the immediate residential area while discouraging (or at least not encouraging) through traffic on Court Street. Compared to the daily volumes shown for alternates D and E this proposal would put around 300 vehicles on Court south of Mellus and 400 on Las Juntas near Thompson. Thompson Street would carry around 200 vehicles a day. This alternative leaving Thompson Street a cul-de-sac would place around 500 vehicles on Las Juntas Street south of Green Street. Green Street volume would increase by 200-300 vehicles a day.

A third variation in the circulation pattern compatible with Alternates A, B and C is to make Pine Street and Court Street a one-way pair with Pine northbound and Court southbound. This configuration would provide increased street capacity in the Civic Center area,

smoother flow and simplified turning movements. Drawbacks to this proposal are the narrow width on Court Street between Escobar Street and Marina Vista, the intersection offset at Escobar Street and development of a suitable crossover south of the Civic Center, none of which are insurmountable. The Pine Street to Court Street diversion, narrowed to one lane, would be the preferred crossover alignment. Suitable channelization can correct for the intersection offset while elimination of parking on one side (preferably west) will provide sufficient width for two lanes.

MITIGATION MEASURES

Measures to mitigate adverse impacts of the background growth, project associated effects and the construction of the Facility are addressed in this section. The feasibility of individual measures or groups of measures to be implemented in the Martinez area is assessed. Incompatibilities between measures are also identified. Mitigation measures below are grouped by major problem area.

Traffic and Parking Demand

Measures which reduce the total number of vehicles entering the Civic Center area will mitigate both traffic and parking impacts. These measures are aimed at increasing auto occupancy or transit ridership.

Carpool Incentives

The County currently sponsors a carpooling program aimed at matching drivers and riders. This program should be actively promoted. As a further incentive parking areas near the center of employment activity may be set aside for the exclusive use of carpool vehicles. The two lots east and west of Pine Street between Marina Vista and Escobar Street are ideally situated for this purpose as they are within two blocks of the major Civic Center buildings. Off-street spaces in close proximity to the entrance to the Detention Facility may also be designated for carpools as the Facility is well to the south of the existing complex.

Vanpooling is a special type of carpool operation the County may investigate. The vanpool operates like a typical carpool or ride sharing arrangement except that the employer owns the vehicles. Systems may have fares or be fare-free, there is a wide range of subsidy options available. Vanpools have had their best success operating mid to long-range commutes (8-30 plus miles) where the travel time differential becomes competitive.²⁴

Transit Diversion

Increased transit ridership is limited by existing service frequencies. There are only two morning BART express busses convenient for 8:00 a.m. start times, only one bus each convenient for 4:30 and

²⁴ Ira Forstater and Ed Twomey, Vanpooling: A Summary and Description of Existing Vanpool Programs, U.S. Environmental Protection Agency, Washington D.C., January 1976.

5:00 p.m. departure times. Over the forecast period public transit will be limited to providing Civic Center accessibility to persons with occasional travel needs to Martinez and no private means of mobility.

Activity Relocation

Relocation of some County activities currently housed in the Civic Center area to places outside central Martinez will reduce both traffic and parking demand. A good example is relocation of the Patrol Division of the Sheriff's Department. Placing this operation outside the Civic Center would reduce total traffic generation by at least 400 vehicles a day, or an amount comparable to the additional Detention Facility traffic. In addition it would free the 112 space lot currently used by patrol vehicles. Other County Departments, such as Building Inspection, may also be feasible candidates for relocation.

Pricing Controls

Pricing controls, particularly on parking, are common ways of manipulating demand in large urban areas. JHK does not find this feasible in Martinez however. There is too much free parking close to the major demand generators for such policies as fee lot parking for employees to have much, if any, effect on demand. Such lots would have to be coordinated with parking prohibitions over a large area (most of the Pine Street corridor north of Jones Street) in order to effectively curtail demand.

Congestion Disincentives

A major contributor to the high peak hour auto occupancy observed at Caldecott Tunnel and the Bay Bridge, along with pricing incentives and average trip length, are congestion disincentives. These are self-regulating devices in many ways since they depend on the individual driver's perception and avoidance of unpleasant traffic or parking conditions. To be effective they require the maintenance of capacity conditions, since, in the absence of deficiencies, drivers will not have anything to avoid. This is presently happening with respect to Civic Center traffic as shown by the diversion of S.R.4 traffic to Howe Road from Alhambra Avenue. Overall however, Civic Center conditions are not sufficiently poor for this to be a serious factor. Nor would this be recommended by JHK for use in Martinez since the area is small enough for other, more positive, incentives to be applied first. In essence, this is the last resort.

Peak Hour Demand

The period of maximum congestion and delay, such as it is, occurs during the P.M. peak traffic hour. It is associated with the sudden release of most County office employees at 5:00 p.m. Two techniques for dealing with peak congestion are to reduce the demand or to simplify flow patterns, which gives a greater effective capacity.

Staggered Work Hours

Staggered work hours or flexible time concepts can be very

beneficial in mitigating short term peak traffic congestion. Staggered work hours is the more formal approach. It may be applied very rigorously over time increments as fine as ten minutes when a large number of employees are under the control of a single agency. The State offices along Capitol Mall in Sacramento and near the San Francisco Civic Center are on this type of program. Unfortunately staggered work hours are incompatible with carpooling unless a very large number of employees are involved.²⁵ Flexible time is usually a more informal approach, defining a core time period or time intervals around which employees may independently arrange their arrival and departure times. While not as well controlled as staggered work hours this approach is equally effective in small areas. It is less disadvantageous to carpools since, as the name implies, employees may adjust their times to accommodate all riders.

Some County employees in the Civic Center had apparently been given flexible schedules between the two traffic count periods of December 1974 and October 1976 as discussed in Chapter 3. The uniform decline in P.M. peak hour volumes reported there may be attributed to a decrease in 5:00 p.m. departures and a concomitant increase in 4:30 departures.

Turning Movement Restrictions

Restrictions on vehicle turning movements at major intersections, particularly left turn prohibitions, are commonly employed during peak periods in downtown areas. Turn prohibitions ensure that the full available roadway is used for moving vehicles and the queues will not develop behind vehicles which would normally be turning left. As it is there are few turning opportunities from the major north-south streets in the Civic Center area, particularly under Alternates D and E. Therefore such control techniques are not considered appropriate for the Civic Center area.

Parking Supply Adjustments

In addition to measures aimed at decreasing parking demand there are opportunities to increase parking supply in the Civic Center area. This can be accomplished by building more spaces for long term demand and by reallocating existing short term supply in the core area.

Additional Parking Spaces

Additional parking spaces may be developed by purchasing additional land outside the Civic Center area or by building parking structures on existing lots. As an estimate 130 spaces may be developed per block. Therefore one additional block would allow alternatives A, B, and C to meet peak Monday demand with periphery utilization values no worse than today's. Alternates D and E require the addition of two blocks worth of parking. The two blocks most suitable for acquisition are those bounded by Las Juntas, Green, Court, and Mellus Streets. This is

²⁵ R. Remack and S. Rosenbloom, Peak-Period Traffic Congestion, NCHRP 169, Transportation Research Board, Washington D.C. 1976.

generally the area between the western boundary of the Civic Center area and Alhambra Creek.

Parking structures have a higher space return per unit of land area, but a lower return per unit of structure footprint. Assuming 100 spaces per floor, one two-story structure on one block would provide sufficient space for peak demand at current periphery utilization rates. These estimates are based on 1980 demand assuming continuation of present efficiencies. A combined program of demand reduction and increased efficiency could probably satisfy Alternates B and C, one additional block would be sufficient for A, D, and E requirements.

Short Term Utilization Increase

The short term (2 hour) parking near the Administration Building is being used for long term parking, as are some of the spaces in the City lots which are also designated for 2 hour parking. To encourage better turnover and self enforcement it may be desirable to meter the curb spaces, reduce the limit to one hour, or both. In any case, vigorous enforcement of the time limit regulations will be required to ensure that they are not abused.

Construction Traffic and Parking

During construction of the Detention Facility there will be additional traffic and parking demands as described in Chapter 4. In summary these impacts are 150 peak hour vehicle trips, heavy truck activity and demand for 150 parking spaces. Mitigation measures addressing each of these impacts are described in this section of the report.

There is no feasible technique for reducing the total peak hour construction worker traffic. It is possible to reduce the impact of this traffic however, by shifting the workday start and stop times away from those used in the Civic Center office buildings. A 7:30 a.m. to 4:00 p.m. construction workday will avoid the County employees' commute period. Similarly, material handling activities which will impact the streets or temporary street closures should be scheduled away from peak traffic periods.

To reduce the impact of truck traffic on streets in the Civic Center area the County may, as a construction contract provision, designate a route to be used by all trucks traveling to or from the site. The recommended haul route is IS 680 and Marina Vista to Court or Pine Streets. This route is recommended since:

- . it is a four lane facility all the way to the Civic Center area and there are ample passing opportunities
- . this route passes the fewest number of residential units
- . there is already appreciable truck traffic on Marina Vista and the proportional effect is less than traversing streets with low truck volumes

- . this is the most direct route to the Civic Center area from the regional highway network.

If designation of this specific route requires trucks to make longer trips than would otherwise be the case, the County should be prepared to pay a slight premium for the privilege of specifying the route. The cost should be minimal considering the benefits gained by doing so.

Construction employee parking demand impacts may be mitigated by locating temporary satellite parking lots outside the immediate Civic Center vicinity. Two areas appear feasible for this purpose. The first is the graveled lot on the Shell Oil Company property on the north side of Pacheco Boulevard east of Howe Road. Use of this facility may require installation of additional fencing but it has an all weather surface and a separate gate. Employees would have to be shuttled from the lot to the work site. The second area would be north of the railroad in the Waterfront area. Use of this area would require installation of a temporary surface in addition to security features. Depending on project timing it may be possible for the County to use a portion of the paved lot being installed by the City during the first phase of the Waterfront Park improvements. Shuttles will also be necessary here. Use of either satellite lot may incur additional labor expense.

6. SUMMARY OF IMPACTS AND MITIGATION MEASURES

This chapter contains a brief summary of the traffic and parking impacts associated with the Detention Facility project. A listing of mitigation measures judged by JHK to be the most efficacious and feasible for implementation in the County Civic Center area is also included under each impact area. A comparison of relative impacts for each alternate is summarized in Table 6-1.

CIRCULATION AND ACCESS SYSTEMS

Impacts on the circulation and access systems are related to the amount of street closure or rerouting contained in project alternates. This ranges from very little for Alternates A and B to very substantial for Alternates D and E. The majority of impacts occur within the Civic Center, access and circulation to adjacent areas is little affected. Those areas outside the Civic Center with the greatest change are Willow Street between Mellus and Green Streets and the residential area bounded by Green, Court, Las Juntas, and Henrietta Streets. Persons residing in this area may have to alter their access patterns by up to two blocks.

Within the Civic Center the major shift is diverting Pine Street to Court Street, with Court Street becoming the major through and external access facility, under Alternates D and E. The remaining portion of Pine Street south of Escobar Street serves local circulation and parking lot access. In effect, the major access route is to the west of, rather than in the middle of, the building complex. None of the circulation system revisions create access impacts that cannot be overcome by a simple rerouting of present patterns. No other mitigation measures are considered necessary.

TRAFFIC VOLUMES

There is no difference between alternates with respect to their traffic generation. Daily trip generation increase is 430 trip ends, P.M. peak hour is 90 trip ends. This amounts to approximately 1% of the estimated 1980 daily traffic volume on the major arterials accessing central Martinez. The peak hour volume comprises around 2% of the estimated peak hour arterial traffic. In terms of both relative value and absolute traffic, these are very small changes and do not have any significant effect on the major streets.

Within the Civic Center area the changes in traffic volumes induced by the street closures and reroutings and the relocation of parking facilities are of greater impact than the increment in traffic demand generated by the Facility. Peak period critical intersection volumes are up to 20% greater under some Alternates compared to the 1980 base condition (no project). This increase is still well below the capacity of the affected locations.

During the height of construction the Detention Facility will

Table 6-1

SUMMARY RANKING OF DETENTION FACILITY ALTERNATES

Impact Area	Alternate Rank				
	A	B	C	D	E
Circulation System	1	1	3	4	5
Traffic Volumes	2	1	3	4	5
Vehicle Miles of Travel	1	2	4	3	5
Parking Supply	3	1	2	4	5
Congestion and Delay	1	1	3	4	5

Notes: 1 - Least Impact

5 - Most Impact

Equal rankings indicate no discernable difference between alternates.

Unweighted rankings, actual differences small in some cases.

generate 420 daily trips (including trucks) with a commute period peak of 150 vehicles. Total truck volume during the heavy haul period will be 90 trips per day, spread evenly over the working period. Peak period traffic will coincide with the Civic Center peak as the proposed work day is 8:00 a.m. to 4:30 p.m. The construction peak will occur in late 1977 however, and base traffic will be 6% to 8% lower than in 1980. Therefore, total peak hour traffic will be less than in 1980 without the project. Any peak period traffic impacts could be mitigated by changing the work day to a 7:30 - 4:00 schedule. Truck traffic impacts on the adjacent area may be minimized by designating Marina Vista as the haul route.

VEHICLE MILES OF TRAVEL

Vehicle miles of travel within the defined impact area (generally older Martinez) does not vary significantly between project alternates. The Facility itself will generate an additional 550 VMT daily. VMT increase due to changes in the Civic Center circulation system is around 200. Rounding to the nearest significant digit shows a VMT increase of 1,000. Total area wide 1980 daily VMT is 117,000 plus or minus 25,000, for the base condition. With any Detention Facility alternate the total VMT is 118,000, or less than 1% over the no project case.

Within the Civic Center area there are measurable differences in VMT between Detention Facility alternates. Compared to the total, the difference is small however. The range of alternates is only 162 VMT from a base of over 4,200. This is still greater than the increment between the no project base and the lowest estimate including the Detention Facility. The Civic Center area comparison was the one used to rank alternates in Table 6-1.

PARKING

Impact of the Detention Facility on parking in the Civic Center area is substantial. This is due more to the effect of the project on potential supply than to the additional increment of parking demand generated by the Facility. Total additional Detention Facility demand is 130 spaces. All of the proposed project alternates supply enough parking to meet the incremental increase (although Alternate E just barely covers it). However, there is a present parking deficiency in the Civic Center area which will be substantially worsened by 1980. Since the project will consume all of the undeveloped area remaining in the Civic Center (as well as some presently developed parking) opportunities to add more parking space to meet the base demand are seriously constrained compared to the no project alternative. Only Alternates B and C supply enough parking to accomodate the average daily demand within the prescribed optimum limits. Alternate A has a slight shortfall.

Mitigation measures to alleviate the parking impacts are generally applicable to the Civic Center as a whole rather than just the project. Measures are aimed at decreasing the demand for parking, achieving more efficient use of parking and adding parking. These are summarized as follows:

- . Increase vehicle occupancy through continued promotion of the County's carpool program. Consider implementing a vanpool program.
- . Provide carpool incentives through preferential parking allocations.
- . Relocate certain Civic Center activities such as the Sheriff's Patrol Division, to increase supply and reduce demand for parking.
- . Reduce time limit on meter restricted parking to encourage self-regulation and turnover.
- . Vigorously enforce established time limit parking regulations.
- . Provide satellite parking during construction of the Detention Facility.
- . Purchase additional property for parking lot expansion.
- . Convert existing lots to multi-level structures.

CONGESTION AND DELAY

The increment of additional traffic generated by the Detention Facility will not impact traffic flow significantly. Within the Civic Center area itself however there will be some additional congestion generated by street closures, changes in parking access and additional traffic control device installations. This will generally follow the same pattern of peak congestion presently observed where short term (ten minute) congestion results from the intensity of activity following the close of the normal work day at 5:00 p.m.

The recommended mitigation measure is to extend flexible work hours over additional County Departments. Apparently some Civic Center offices already have some form of flexible or staggered hours. Additional measures described above to reduce parking demand will also reduce peak traffic demand and resultant congestion. During construction of the Facility material handling or construction activity which infringes on the streets should be scheduled to avoid the peak traffic periods.

Chapter 17

NOISE

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Earth Metrics Incorporated
Palo Alto, California
January, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	17-1
EXISTING SETTING	17-1
FUTURE COMMUNITY NOISE	17-7
MITIGATING MEASURES	17-10
APPENDIX	17-14
REFERENCES	17-15

ILLUSTRATIONS AND TABLES

FIGURES

Figure 1: Locations of Sound Measurements	17-3
Figure 2: Existing CNEL Contours	17-6
Figure 3: 1980 CNEL Traffic Noise Contours for the No Project Alternative	17-8
Figure 4: 1980 CNEL Traffic Noise Contours for Alternative E	17-9

TABLES

Table 1: Design Noise Level/Land Use Relationships	17-2
Table 2: Results of Noise Measurements In and Near Project Area	17-5
Table 3: Typical Average Construction Noise Levels	17-11
Table 4: Noise Levels From the Noisiest Equipment	17-12

INTRODUCTION

The project proposal involves the construction of a new Criminal Justice Detention Facility in the downtown area of Martinez. The proposed facility would be located within a six block area, on approximately 7.5 acres.

EXISTING SETTING

The major source of community noise in the study area is motor vehicle traffic; there is also some noise from trains for durations of a few minutes several times a day.

The basic unit for quantifying community noise is the A-weighted decibel (dBA). This unit weights the various frequencies of noise so as to approximate the response of the human ear. The dBA can be used with various scales in further describing community noise and highway noise in particular. Two scales, the L_{10} and the CNEL are used in this report.

The L_{10} is the noise level exceeded 10 percent of the time; this value has been widely used to characterize highway noise and it correlates well with surveys of human annoyance due to noise. (See Appendix, Health Effects of Noise). The Federal Highway Administration (FHWA) has recommended maximum peak-hour L_{10} levels of 70 dBA for residential use and 75 dBA for commercial and industrial uses (See Table 1).

CNEL is an average of daytime, evening and nighttime sound levels, with nighttime noise (10:00 p.m. to 7:00 a.m.) weighted most heavily (since nighttime noise is more annoying). The California State Building Code requires an acoustic analysis whenever a proposed residential non-single family development is in a noise climate greater than 60 CNEL. The acoustic analysis must demonstrate that the proposed development is compatible with the existing noise climate (that is, that interior levels which are attributable to exterior sources shall not exceed 45 CNEL). The Contra Costa County Noise Element of the General Plan recommends a maximum of 60 CNEL for residential land uses.

Noise Measurements. In order to assess the existing noise setting, seven noise measurements were made in and near the project area. The results of the measurements showed that noise in the area has not changed significantly from April, 1975, when a similar analysis was completed for a previous County detention facility project (Response Document and Second Appendix, Final EIR, "Criminal Justice Detention Center", 1975). This is to be expected since traffic patterns are essentially unchanged, and traffic volumes have increased less than three percent. The results of both analyses are presented here. The measurement locations are shown in Figure 1.

Methodology. The instrument used for the noise measurement was a Bruel and Kjaer Model 166B/S.45 Environmental Noise Classifier. This is a self contained instrument used to obtain the statistical distribution of noise. It divides a range of 30 dB into eleven amplitude classes and one exceedence class. The base class can be set from 60 dBA to 100 dBA in nine 5 dB steps with an additional base setting at 45 dBA. The results as well as the total time of the sample are recorded manually from the instrument face. The

Table 1. Design Noise Level/Land Use Relationships

Land Use Category	Design Noise Level - L ₁₀	Description of Land Use Category
A	60 dBA (Exterior)	Tracts of lands in which serenity and quiet are of extraordinary significance and serve an important need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose. Such areas could include amphitheaters, particular parks or portions of parks, or open spaces which are dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet.
B	70 dBA (Exterior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, picnic areas, recreation areas, playgrounds, active sports areas, and parks.
C	75 dBA (Exterior)	Developed lands, properties or activities not included in categories A and B above.
D	--	For requirements on undeveloped lands see paragraphs 5a(5) and (6), this PPM.
E*	55 dBA (Interior)	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals and auditoriums.



Figure 1. Locations of Sound Measurements (Sites 8 through 15 are from Acoustic Analysis of the Proposed Contra Costa County Criminal Justice Detention Center, April 4, 1975)

instrument was calibrated before sampling with a Bruel and Kjaer Type 4230 Sound Level Calibrator. A spherical windscreen was used at all times to reduce wind noise. During the sampling period the total volume of traffic and truck mix were counted and recorded. Vehicle speed was estimated and noted. In addition, approximate wind speed and direction were noted. The A-weighting scale was used at all times.

Results. The results of the measurements are shown in Table 2. L_{10} 's were calculated directly from the measurements, as were L_{50} 's. (L_{50} is the noise level exceeded 50 percent of the time). CNEL's for the area were predicted from a mathematical model which was developed by the Highway Research Board and which is approved by the Federal Highway Administration. Parameters used in the predictions included average daily traffic, vehicle speed, heavy duty vehicle mix, roadway configuration topography and the presence of buildings between the noise sources and the receivers. Noise contours of existing CNEL's from Pine Street calculated from the model and the traffic data are shown in Figure 2. The peak hour L_{10} levels along Pine Street, using the same model, are approximately 6 dBA higher than the CNEL levels.

The land uses adjoining Pine Street are presently exposed to what would be generally considered a noisy urban environment. Peak hour L_{10} levels greater than 70 dBA and CNEL levels above 60 CNEL render these land uses unacceptable for any exterior activities involving speech or other communications. While the residential areas southeast of Mellus Street are somewhat quieter than those parcels from Mellus to Escobar Street, they too receive exterior noise levels which would interfere with normal speech.

Interior levels in this area depend on the type of construction of the individual building. Normal residential construction with windows closed yields approximately a 24 dBA reduction in the intruding noise (EPA, 1974). By this criterion, therefore, buildings adjacent to Pine Street now provide sufficient protection from the high exterior noise levels to ensure that the intrusion of exterior noise sources does not exceed 45 CNEL (as recommended by the California State Building Code). This reduction factor, however, is generally an overestimate for older houses which are not well sealed around windows and doors. (It is an underestimate many times for modern homes with insulation in walls and roofs).

Table 2
Results of Noise Measurements In and Near the Project Area

Date	Site No.	Beginning Time	Traffic (per 15 min.)	L ₁₀	L ₅₀
Sept. 10, 1976	1	11:00 a.m.	202	71	64
	2	11:25 a.m.	225*	58	53
	3	11:50 a.m.	243	55	49
	4	12:20 p.m.	80**	63	56
	5	1:45 p.m.	246***	60	54
	6	2:15 p.m.	2	52	47
	7	2:40 p.m.	208	71	64
March 31, 1975	8	9:45 a.m.	8	61	54
	9	10:10 a.m.	6	60	55
	10	10:30 a.m.	0	55	52
	11	11:00 a.m.	6	59	55
	12	11:20 a.m.	6	59	54
	13	11:40 a.m.	57	65	59
	14	12:05 p.m.	165	75	68
	15	12:25 p.m.	98	72	65

* 218 on Pine Street, 7 on Mellus Street;

** 52 on Ward Street, 28 on Court Street;

*** 237 on Pine Street, 9 on Green Street;

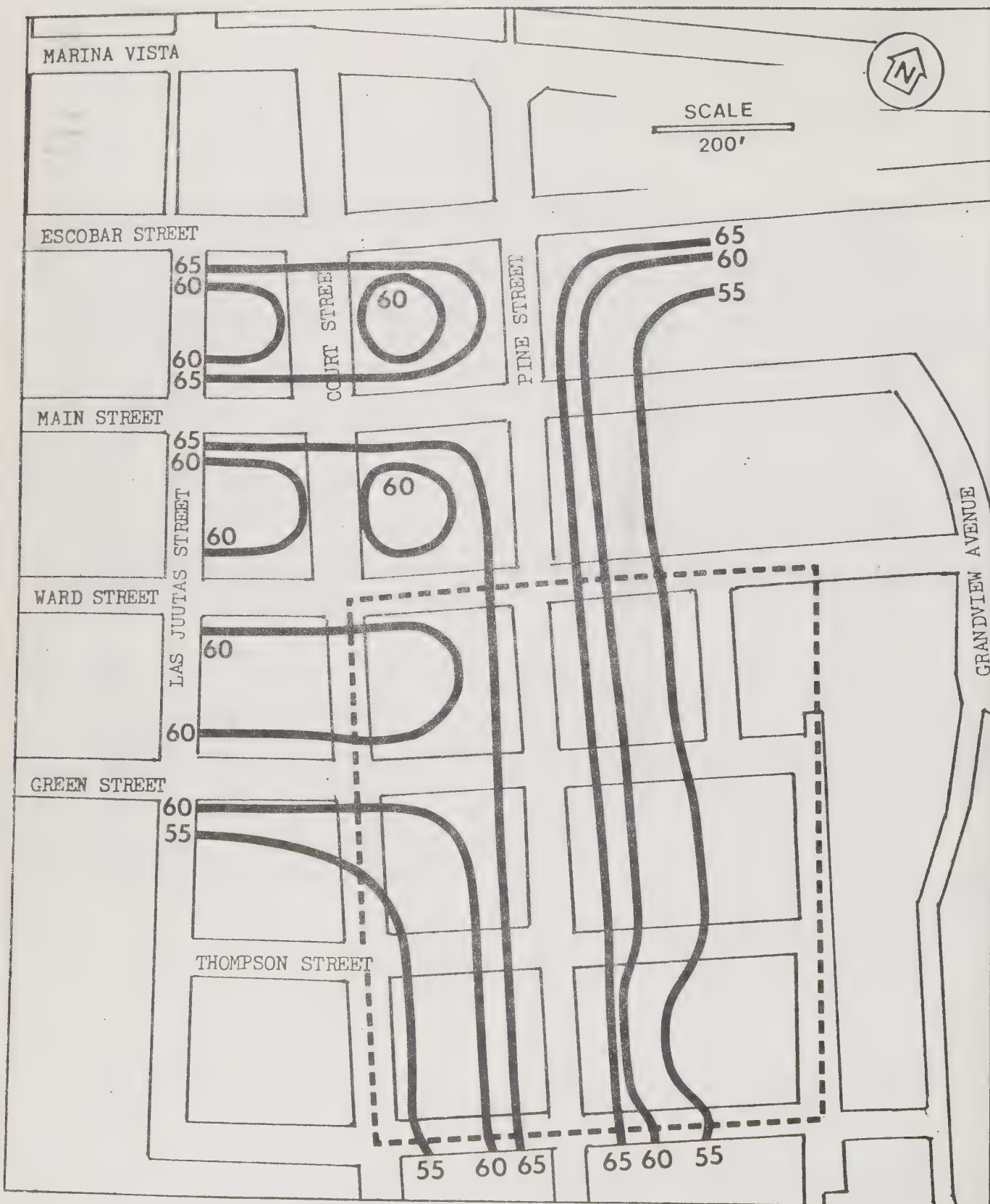


Figure 2. Existing CNEL Contours, Based on Computer Model of Existing Traffic Noise. (Peak Hour L_{10} Levels, Based on the Computer Model, are Approximately 6 dBA Greater than the CNEL Levels)

FUTURE COMMUNITY NOISE

Future CNEL noise contours were developed for the proposed project and the No Project Alternative, based upon the expected traffic conditions for the year 1980 (see Traffic and Parking chapter). These contours are presented in Figures 3 and 4. In addition, the relative traffic noise impacts of the other project alternatives were also considered.

Based upon the 1980 traffic volumes supplied by JHK & Associates (see Traffic and Parking chapter), traffic noise levels for the No Project Alternative would be only slightly increased over existing levels. Additionally, noise levels between the No Project Alternative and Alternatives A and B would be indistinguishable. Alternative C would also result in similar noise levels, except for slightly increased traffic and noise levels along Pine Street between Mellus and Ward Streets, and significantly increased traffic and noise levels along Ward Street west of Pine Street, with an correspondingly significant decrease in traffic and noise along Green Street in the same area, due to the closure of Green Street between Pine and Court Streets.

The traffic patterns and noise levels associated with Alternatives D and E (the proposed project) are considerably different from the other alternatives, due to the diversion of Pine Street traffic south of Mellus Street to Court Street north of Thompson Street. As a result, noise levels along Court Street in this area would be significantly higher than is the case for the No Project and other alternatives, while the "Pine Street" noise levels in the county civic center north of the Pine Street diversion would be noticeably lower. The major area where Alternative E differs from Alternative D is the increased traffic and noise levels on Ward Street (west of Pine Street), with a corresponding decrease in traffic and noise levels on Green Street, due to the additional closure of Green Street east of Pine Street in Alternative E.

Comparing the No Project Alternative with specific changes in the CNEL traffic noise levels of Alternative E, increases of 2 dBA on Ward Street west of the project area, and 7 dBA on Court Street north of the Pine Street diversion, would occur. The increase on Ward Street constitutes only a minor increase in noise levels, but the increase on Court Street will be a significant impact, especially for the residences on Court Street between Ward and Mellus Streets (of which there are few at the present time). In this area, noise levels would rise to near the existing noise levels along Pine Street, south of the project area. Significant decreases in CNEL noise levels of 6 dBA on Pine Street north of the project site, and 5 dBA on Green Street west of Court Street, would also occur with Alternative E, compared with the No Project Alternative.

Construction Noise. Construction operations of facilities such as the Detention Facility generally proceed in five phases: ground clearing, excavation, foundations, erection and finishing. These phases with their associated noise levels last varying lengths of time, due to the differing amounts of work required. Table 3 presents the range of average noise levels on the construction site which would be expected for each of these five phases, during construction periods each day. The upper end of the range assumes all

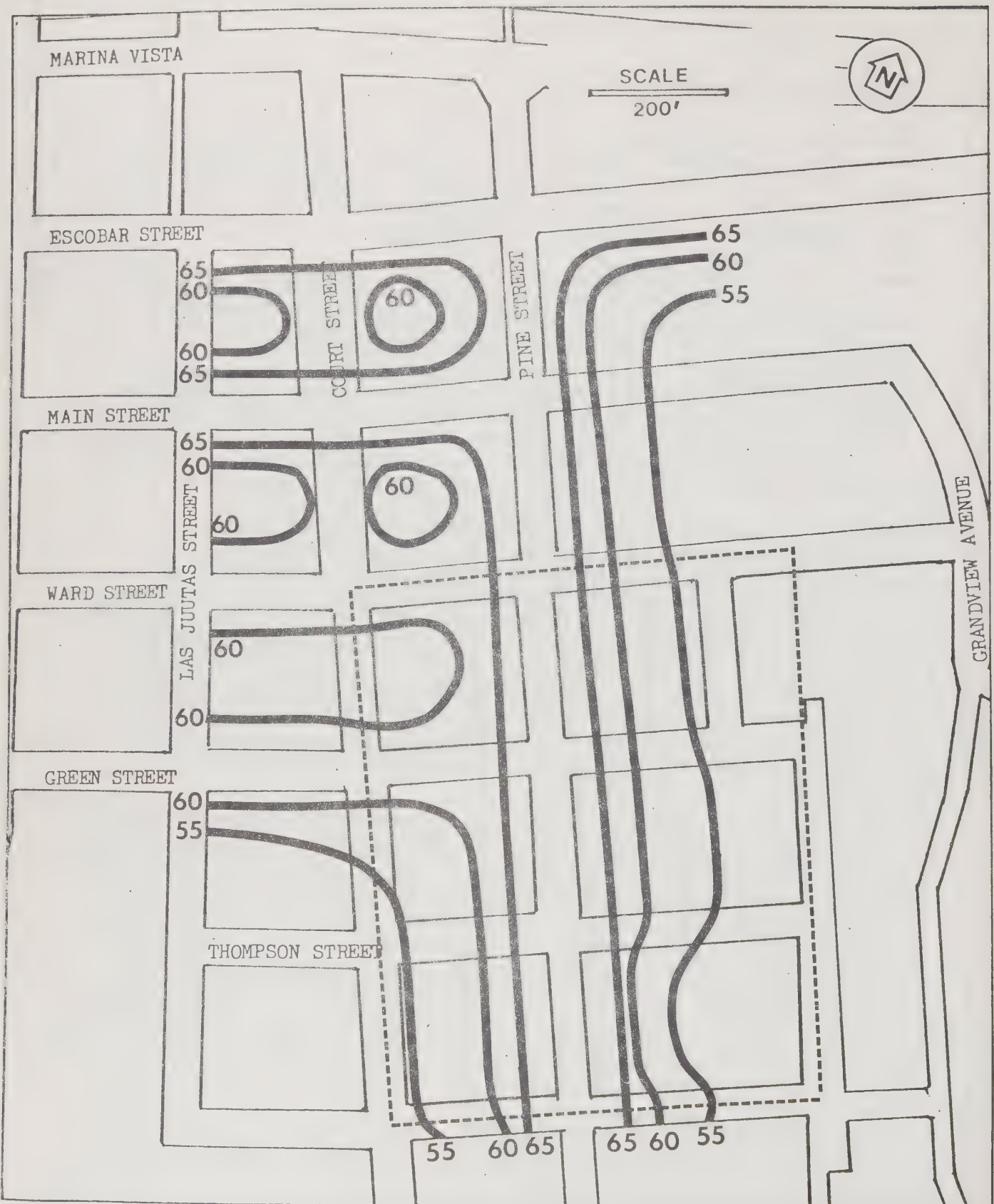


Figure 3. 1980 CNEI Traffic Noise Contours for the No Project Alternative

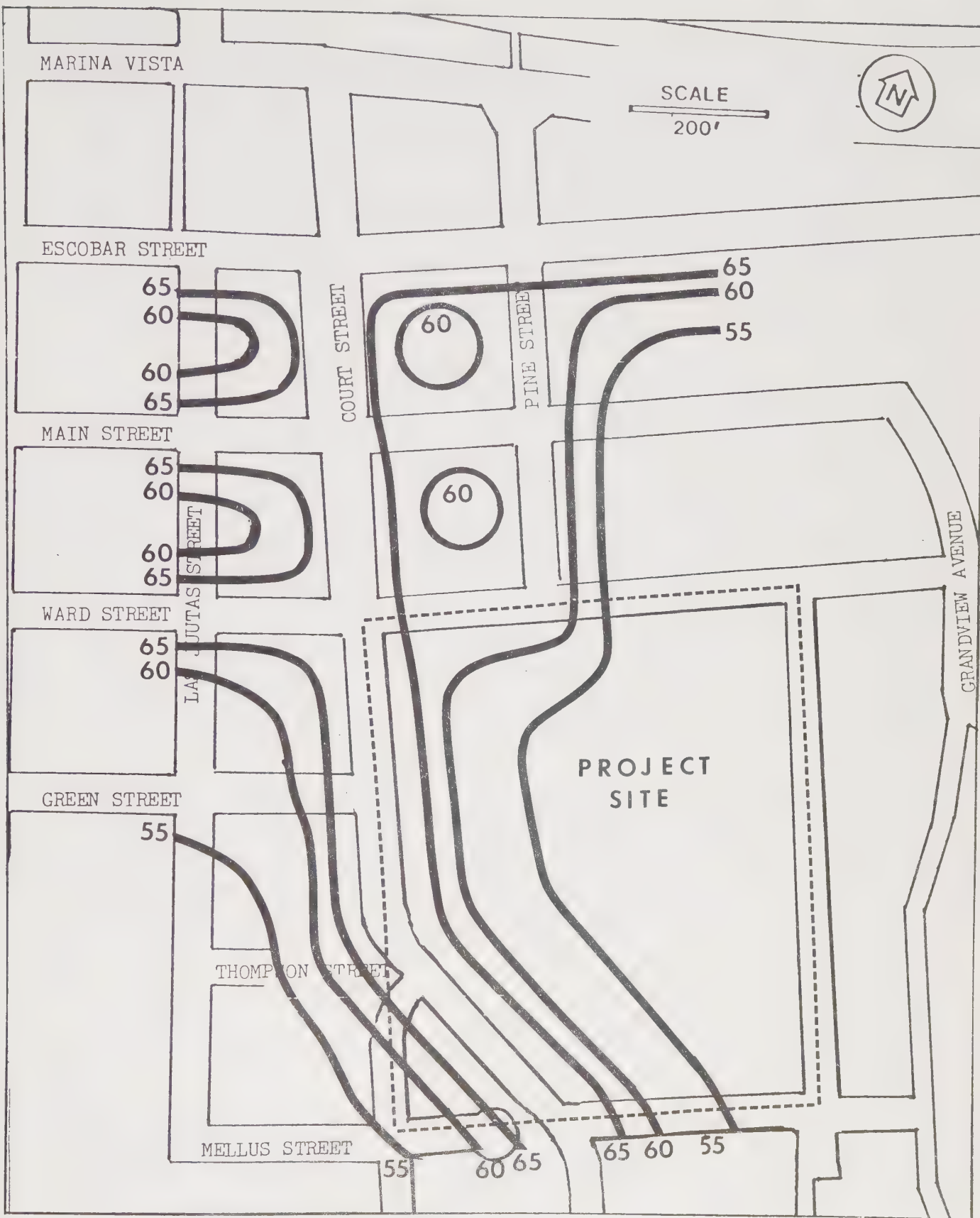


Figure 4. 1980 CNEL Traffic Noise Contours for Alternative E

customary equipment is present at the site while the lower end of the range assumes only the minimum required equipment is present at the site (EPA 1971). Table 3 also presents the average noise levels which are expected to occur at the nearest residences to the construction site, for each Alternative, during each of these phases. Table 4 presents the noisiest equipment types which will likely be operating at the construction site during each phase of construction (EPA 1971). Noise levels at 15 meters (50 feet) from the equipment plus the noise levels at the nearest residences for each Alternative are included. It should be noted that the noise levels associated with the noisy equipment in Table 4 are higher than the average noise levels given in Table 3. This follows because the noisy equipment will be operating only part of the time, while at other times lower noise levels will be emanating from the construction activities.

The construction noise levels for all of the alternatives presented in Tables 3 and 4 represent highly annoying outdoor noise levels, for pedestrians in the vicinity of the project site, as well as at the nearest residences and offices to the site. These are worst case noise levels, however, applicable when the construction operations are proceeding at their closest location relative to the nearby pedestrians or residents. (The nearest residences to the construction activity vary, depending on the particular alternative and the current phase of construction. For example, for Alternative E the closest residences would be located on Mellus Street during the ground clearing phase, but during most of the other phases, they would be located on Court Street). At these residences indoor noise levels, under windows closed conditions, will average approximately 24 dBA lower than the levels predicted here (EPA, 1974). Additionally, indoor and outdoor noise levels will be somewhat lower when the construction equipment is operating at more distant locations on the project site. At least at certain times during construction, indoor daytime levels at nearby residences will probably be high enough to be unacceptable to some people.

Not included in the above discussion is the noise resulting from pile drivers, since their use is not expected at the project site. However, if pile drivers are needed, they would produce 101 dBA at 15 meters (50 feet), the highest noise levels of all equipment used during the construction operations. Additionally, their repetitive impact character would increase their annoyance to nearby residents and pedestrians. This impact can be considered significant and there are few mitigation measures available which would reduce this impact.

MITIGATING MEASURES

The following measures are recommended to minimize the construction noise impact of the project.

- The quietest available equipment should be used during the construction of the project. (The County and the City of Martinez should consider implementing a construction noise ordinance or standard with quantitative noise thresholds to insure that this takes place).
- Construction operations should not occur before 8:00 a.m. or after 6:00 p.m. to minimize annoyance to nearby residents.

Table 3. Typical Average Construction Noise Levels Expected on the Construction Site, and at Nearest Residences for Each Alternative, During Different Phases of Construction (dBA)

Construction Phase	On Construction Site	AT NEAREST RESIDENCES FOR ALTERNATIVE:									
		A		B		C		D		E	
Ground Clearing	I II	I II	I II	I II	I II	I II	I II	I II	I II	I II	I II
	84 84	78 78	78 78	78 78	78 78	78 78	78 78	78 78	78 78	78 78	78 78
Excavation	89 79	78 68	75 65	79 69	77 67	78 68					
Foundations	78 78	67 67	64 64	68 68	66 66	67 67					
Erection	86 76	80 70	80 70	80 70	80 70	80 70					
Finishing	89 76	78 65	75 62	79 66	77 64	78 65					

- I. All pertinent equipment present at construction site.
 II. Minimum required equipment present at site.

Table 4. Noise Levels from the Noisiest Equipment Operating During Each Phase of Construction, at 15 meters (50 feet) from the Equipment, and at the Nearest Residences for Each Alternative (dBA).

Phase	Type of Equipment	At 15 meters (50 feet)	AT NEAREST RESIDENCES FOR ALTERNATIVE:				
			A	B	C	D	E
Ground Clearing	Truck Scraper	91	85	85	85	85	85
		88	82	82	82	82	82
Excavation	Rock Drill Truck	98	87	84	88	86	87
		91	80	77	81	79	80
Foundations	Jack Hammer Concrete Mixer	88	77	74	78	76	77
		85	74	71	75	73	74
Erection	Paver Derrick Crane	89	83	83	83	83	83
		88	77	74	78	76	77
Finishing	Rock Drill Truck	98	87	84	88	86	87
		91	80	77	81	79	80

- Equipment operations should be scheduled to keep average construction noise levels as low as possible. Also the noisiest equipment should be scheduled to operate during the times of highest existing ambient levels. .
- Noisy equipment should be operated as far as possible from site boundaries.
- Consider providing enclosures for stationary construction equipment, and barriers around particularly noisy areas of the site.

The following measures to minimize the impact of the increased traffic noise on Court Street associated with Alternative E, should be considered.

- Measures to reduce peak traffic congestion in the Civic Center area, such as staggered working hours, could be implemented to reduce the vehicle noise resulting from stop and go traffic.
- The County and the City of Martinez should be encouraged to enforce the State of California noise standards for motor vehicles.

APPENDIX: HEALTH EFFECTS OF NOISE

The health effects of noise on people can be divided into two categories, psychological and physiological. People who are regularly exposed to high noise levels may be less sensitive to community noise. Also, continuous noise has been found to be less annoying than intermittent noise. Physiological effects include loss of hearing, speech interference, sleep disturbance and vasoconstriction (constriction of the veins). Loss of hearing does not usually occur as the result of community noise, as high levels and long exposure times are required.

Studies have shown that for acceptable speech indoors, background noise levels should be less than 45 dBA. The levels at which sleep disturbance occur vary with individuals. However, sleep intrusion can occur at levels as low as 35-40 dBA. By 55-60 dBA almost 50 percent of the population experiences sleep disturbance (is caused to awaken or experience a change in depth of sleep). Vasoconstriction occurs for levels greater than 70 dBA and the degree of constriction is proportional to the number of decibels by which the level exceeds 70 dBA.

Psychological effects include annoyance, stress, and deterioration of work performance. The level at which annoyance occurs varies with setting and the specific activity in which one is engaged. The level at which stress is caused is dependent on the individual and the setting. It has been found that performance of work can be affected at levels of 65 dBA for some individuals. Noise can also affect the accuracy and the amount of work produced by students.

REFERENCES

Contra Costa County Planning Department (July, 1975), Noise Element of the Contra Costa County General Plan

California Administrative Code, Title 25, Chapter 1, Subchapter 1, August 23, 1974

Federal Highway Administration, U. S. Department of Transportation, "Procedures for Abatement of Highway Traffic Noise and Construction Noise", 23 CFR Part 772, 41 (April 23, 1976) Federal Register, 16933.

National Cooperative Highway Research Program (1971), Highway Noise: A Design Guide for Highway Engineers, Report 117.

National Cooperative Highway Research Program (1974), Highway Noise: A Field Evaluation of Traffic Noise Reduction Measures, Report 144.

U.S. Environmental Protection Agency (March 1974), Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety.

U. S. Environmental Portection Agency (December 1971), Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances.

Chapter 18

EXISTING LAND USE

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Planning Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	18-1
SECTION I - Land Use Survey Area Overview	18-1
SECTION II - Land Use Outside Civic Center Boundaries	18-3
SECTION III - Land Use Fronting Civic Center	18-10
SECTION IV - Land Use Within Civic Center Boundaries	18-11
SECTION V - Impacts	18-12
SECTION VI - Mitigation Measures	18-17

ILLUSTRATIONS AND TABLES

MAPS

Map 1: Existing Land Use	18-2
--------------------------	------

TABLES

Table 1: Leased Office Space Summary	18-6
Table 2: Vacant Parcels West of the Civic Center	18-8

INTRODUCTION.

The proposed Detention Facility is to be built in the County Civic Center area of the City of Martinez. Since both the Civic Center and the surrounding locations are developed, the Detention Facility will have an impact on existing buildings and land use in the area. The purpose of this Chapter is to describe the patterns of development in the areas surrounding the proposed Detention Facility site, thereby providing a context for the impact evaluations presented in this Chapter, throughout the Background Report, and in the Draft EIR text for the project.

The primary aspects to be covered in this Chapter are: 1) the effects of topography on development, 2) the types of land uses in the area, and 3) the analyses of the impacts and of the mitigation measures relating to the proposed Detention Facility. These aspects will be examined in the following sections:

Section I - Land Use Survey Area Overview.

Section II - Land Use Outside Civic Center Boundaries.

Section III - Land Use Fronting Civic Center.

Section IV - Land Use Within Civic Center Boundaries.

Section V - Impacts.

Section VI - Mitigation Measures.

SECTION I - LAND USE SURVEY AREA OVERVIEW.

As defined by the 1963 Contra Costa County Civic Center Plan (see Chapter 19), the Civic Center is bounded to the north by Marina Vista; to the west by Court Street; to the south by Mellus Street; and to the east by Willow Street. The area encompasses approximately 22 acres in the northeast section of the City of Martinez; the proposed Detention Facility is to be built within this Civic Center area.

An inventory of existing land use (see Map 1), in the Civic Center and within a 3 block radius of it, was undertaken in August of 1976. This land use survey area includes Block Group 1 - Census Tract 3160, Block Group 1 - Census Tract 3170 (see Chapter 21), the waterfront area, and the irregularly shaped area enclosed by Estudillo, Green, Las Juntas, Mellus, Court, and Jones Streets. This area is the older portion of Martinez and reflects land use patterns established over the years during the historical development of Martinez as a port, county seat, and commercial center.

The shoreline, marsh areas, and inland valleys with prime agricultural soils contributed to the early use of the area for cultivation. Over the years agricultural usage was replaced by residential development which became the predominant characteristic of the area (see Chapter 8 and 10, Biotic and Historical Resources). Though the oldest existing building committed to government use is the County Finance Building, built in 1901, the changes in the area represent

Map 1
Existing Land Use



a gradual conversion from residential to governmental land use; residential land use is still dominant in the land use survey area. The survey area has also changed gradually, with the commercial and residential expansion of the central county region, to include the growth of offices west of Court Street and the decrease in the extent of retail and commercial uses in the Central Business District of Martinez (CBD).

At present, the land use survey area includes the Civic Center facilities; the railroad tracks and waterfront area to the north; various offices, small residential structures, and a portion of the CBD to the west; a residential area with small structures of various styles and ages to the south; and a residential area, overlooking the Civic Center and the CBD, on the hillside to the east.

SECTION II - LAND USE OUTSIDE CIVIC CENTER BOUNDARIES.

The land use survey area outside the Civic Center boundaries will be examined on a geographic basis and will, within each geographic area, describe 1) general land uses, 2) government/government-related land uses, and 3) undeveloped land and vacant building spaces.

Land Use North of Civic Center.

The land use north of the Civic Center boundary - Marina Vista - is devoted to limited commercial, light industrial, and recreational purposes. Included in this area are the Southern Pacific Railroad tracks and the waterfront area. Located in the waterfront area are: a fire apparatus company; a utility service yard; several large buildings which once constituted a cannery; ball fields; a horseback riding area; boat repair, reconstruction, and the Martinez Marina, including launching facilities; a tackle shop, a restaurant, and parking area.

Undeveloped Land.

A large portion of the land in this area remains vacant. A joint effort between the East Bay Regional Park District and the City of Martinez is underway to develop the land for a regional waterfront park. The City of Martinez has already developed the marina.

Land Use West of Civic Center.

The land use survey area to the west of the Civic Center boundary - Court Street - includes a mixture of residential, commercial, office, and government/government-related land uses. The area encompasses land use from Court Street west to Castro Street and is bounded on the north by Marina Vista and the south by the portion of Brown Street which is west of Pacheco Boulevard.

The land surface in this area is level. South of Susana Street, blocks and streets are laid out according to a grid pattern. North of Susana Street, few streets

are parallel; although individual intersections may give the appearance of a grid pattern, most blocks are not true squares or rectangles. Most roadways in this area are 35 feet in width, but in the residential sections, some roadways are narrower.

Single family residences are present, primarily, south of Susana Street. Multiple family residences predominate in the residential areas north of Susana Street (77% of the dwelling units in Block Group 1 - Census Tract 3160), although a few single family units are present. Multiple family units are primarily concentrated in two areas: 1) the area bounded by Las Juntas, Green, Estudillo, and Henrietta Streets and 2) the area adjacent to the Martinez Intermediate School bounded by Arriba, Estudillo, and Brown Streets. This second area consists of structures more recently constructed. Parcels in the residential areas are highly varied in size and shape, with some having more than one residential structure.

Substantial variations in style and appearance are also present in the residential areas; some structures are single story while others are two story. The residential structures also vary in age; 24% of the residences, however, in the Block Group 1 - Census Tract 3160, were categorized as old or dilapidated.

Also included in the area near Susana Street are the Martinez Elementary and Intermediate Schools, the Susana Street Park (City), and several churches.

Retail and service businesses, as well as offices, are concentrated in the area bounded by the Southern Pacific Railroad tracks to the north and by Green Street to the south. This CBD, as defined by the 1973 Central Martinez General Plan Business Analysis, extends, beyond the boundary of the land use survey area, west to Berrellessa Avenue. In addition, the immediate perimeter of the CBD is characterized by light industrial, storage, office, and deteriorated residential uses. Industrial operations in the northwest corner of the CBD generate heavy diesel truck traffic on Berrellessa Avenue, Alhambra Avenue, Escobar Street, and Marina Vista.

While a limited amount of housing exists in the CBD, this area primarily affords a range of shopping opportunities including general merchandise; apparel; furniture; specialty retail shops; convenience shopping such as food, drugs, and liquor; restaurants, auto repair, and auto parts shops; warehouses; and other services. In addition to the shopping services there is a complement of financial institutions, banking services, law offices, real estate offices, bail bonding, newspaper offices, County offices and notary publics.

Most buildings in the CBD are old; many are two stories and several are three stories. The buildings fronting Main Street vary significantly in height, size, and appearance; some have been substantially remodeled to accommodate offices or other businesses; the exteriors and facades of other buildings have been modernized,

thereby accentuating the variety of styles and appearances. The size of some buildings fronting Main Street have also been somewhat reduced due to two or more retail or commercial tenants occupying a single building.

The CBD's growth as a community shopping center has been limited over the years by a number of factors including, in part, the presence of newer shopping facilities on nearby Alhambra Avenue and in the central county region, the age and size of buildings in the CBD, and the limited parking in the CBD.

The limited commercial growth of the CBD has resulted in use of land for government/government-related purposes or in a continuing existence of undeveloped land or vacant building space in the area west of the Civic Center boundary.

Government/Government-related Land Use.

The County has not constructed any major building in the land use survey area since the Administration Building was built in 1963-64. The County Civic Center Plan called for the construction of a new detention facility, followed by an addition to the Administration Building and a second County office building (see Chapter 19). The County, due to the postponement in the detention facility, has leased office space in downtown Martinez and in other areas of the County. The leased office space in the Martinez CBD includes the following County departments: Clerk-Recorder, Auditor-Controller, Elections, Social Services, Human Resources Agency, Assessor, District Attorney, Public Administrator, and the Probation Department. All of these facilities are located in the area to the West of Court Street in the CBD, with the exceptions of the Auditor-Controller, Elections, and Clerk-Recorder, which have leased office space on Marina Vista.

The County has, for these offices, taken over entire buildings or building space in or near the CBD extending south to Mellus Street. The total amount of office space leased by the County within the land use survey area increased from 5,000 square feet, in 1967, to 65,000 square feet in August, 1976; the majority of the leased space is west of the Civic Center boundary (see Table 1). In some instances the County has remodeled vacant buildings to accommodate County offices.

The presence of County government in Martinez has also attracted organizations, businesses, or individual persons such as labor organizations, law offices, or special interest groups whose land use is essentially government-related. The presence of the proposed Detention Facility may attract additional government-related land use, specifically Detention Facility-related land use. Since most government-related land use outside of the Civic Center presently is located to the west of the Civic Center boundary, primarily in the CBD or along Alhambra Avenue, it is reasonable to assume that this area could attract new uses generated by the Detention Facility.

At present, two bail bond businesses are located west of the Civic Center in the block bounded by Court, Main, Las Juntas, and Escobar Streets. A review

Table 1

LEASED OFFICE SPACE SUMMARY

<u>Year</u>	<u>County Leased Office Space in Land Use Survey area* (sq. ft.)</u>
1967	5,183
1968	21,563
1969	30,492
1970	41,812
1971	41,812
1972	44,244
1973	54,529
1974	58,029
1975	59,825
1976	65,025

*Does not include office space not now occupied.

Source: Contra Costa County Public Works Department (9/76).

of the telephone directory for Central Contra Costa County reveals 28 attorneys listed with offices in Martinez, primarily located in the area west of Court Street; several of these attorneys were listed as specializing in criminal law.

Presence of the proposed Detention Facility may result in the possibility that relatives of incarcerated persons make use of rooming/boarding houses within this area. A telephone survey was conducted in September, 1976, of the several boarding houses in the area west of Court Street to determine the extent of occupancy attributable to the present main jail; while the new Detention Facility may increase occupancy needs, the telephone survey indicated that the present Main Jail has very little effect on occupancy since most rooms in rooming/boarding houses are rented by the month.

The use of leased buildings or office space by the County or other government-related businesses has basically utilized buildings or office space that were vacant.

Vacant Space and Undeveloped Land.

A survey of vacant buildings in the CBD was conducted in September, 1976 for those buildings displaying for sale, rent and/or lease signs. A follow-up telephone survey of owners/real estate agents was made; the telephone survey results indicated that over 15,000 square feet of building space was available in the CBD.

On Main Street the vacant space was confined to three buildings, representing 5,300 square feet. At the time of the survey, two buildings had been vacant for 6 months, while the third had been vacant for approximately 1 year.

Vacant buildings were also located on the side streets Castro, Las Juntas, and Ferry; the available space totaled approximately 9,000 square feet. One owner indicated an additional 2,700 square feet would become available in the future. The maximum length of time in which space remained vacant on these streets was approximately 1 year. Another vacant building was located at the corner of Ferry and Escobar Streets and was available for lease at the time of the survey.

While other vacant building space was noted in the original survey, no follow-up telephone survey was conducted due to the apparent lack of efforts to rent/lease space or the presence of remodeling efforts. In some instances buildings in the CBD are being used for storage; any efforts to rent/lease such buildings for retail or office use would require remodeling.

Undeveloped parcels in the area west of Court Street are summarized in Table 2.

Land Use South of Civic Center.

The land use survey area to the south of the Civic Center boundary - Mellus Street - is comprised of diverse residential structures. The area encompasses

Table 2

VACANT PARCELS WEST OF THE CIVIC CENTER

Location	Approximate Area (Sq. Ft.)	Use
Northeast corner Castro and Escobar Streets	11,000	Informally as parking lot
Southeast corner of Estudillo and Escobar Streets (portion of parcel)	2,500	Informally, as parking lot
Southeast corner Estudillo and Ward Streets	9,600	Informally, as parking lot
East side Estudillo Between Green and Thompson Streets	7,250	Fenced, used for storage in conjunction with adjacent residence.
Northeast corner Estudillo and Thompson Street	9,000	Small garden, remainder essentially unused
South side Green Street Between Ferry and Las Juntas	20,000 (excluding building in retail use)	Unused
Southwest corner Ferry and Mellus Streets	5,000	Pathway and several benches apparently used as park.
Southeast corner Estudillo and Arreba Streets	10,000	Residence under construc- tion on portion of property.

Contra Costa County Planning Department, October, 1976.

land use from Mellus Street south to Brown Street and is bounded by Court Street on the west and Willow Street and Pacheco Boulevard on the east.

The land surface in this area is flat or moderately sloping. Streets are laid out in a grid pattern with most blocks being square in shape. The exception to the grid pattern is Pacheco Boulevard which is at a diagonal to the other streets. Most roadways in this area are less than 35 feet in width.

Single family residences are the dominant land use in this area although several two family or multiple family structures are present. Most multiple family structures are located on corner lots (see Map 1). Most single family structures have one story while multiple family structures have two or more stories. These single and multiple family units are mostly decades old; most are well-kept and in good condition though a few are poorly maintained units. The residences in the blocks directly adjoining the Civic Center fall into this latter category.

The non-residential uses in this area south of the Civic Center boundary are concentrated along Pine Street and Pacheco Boulevard. Pacheco Boulevard, which leads into Pine Street, is one of three main access routes to the CBD and, consequently, is heavily travelled. Included among the non-residential uses along Pine Street are restaurants, a grocery store, the County Employees' Credit Union, and various offices. The California Department of Motor Vehicles is located one block off Pacheco Boulevard, on Haven Street. West of Pacheco Boulevard are: 1) Ricks Park (City) between Arriba and Brown Streets, and 2) churches at the intersections of Mellus and Willow Streets and of Susana and Court Streets.

Land Use East of Civic Center.

The land use to the east of the Civic Center encompasses the area on the hillside between Willow Street and the Shell Oil Refinery storage tanks which are on the ridgeline of the hill. This area is bounded on the north by Marina Vista and extends south to the portion of Brown Street which is east of Pacheco Boulevard.

The hillside has substantially influenced the development in this area. Streets are narrow and curvilinear; residences are several stories high to accommodate the hillside and have been constructed at different elevations. The area, consequently, has a three-dimensional quality which is accentuated by tall, mature trees. The hillside, with the trees and multi-story residences of varying age and individual designs, gives the area a Mediterranean character.

Access to residences on Grandview Avenue, Highland Avenue, Merrihew Drive, Huntington Court, and Lafayette Street is provided by Ward Street. Access to Willow Street - the Civic Center east boundary - is provided by Green, Thompson, and Mellus Streets. Access to the residences southeast of the Civic Center boundaries is provided by Susana and Warren Streets. While the Shell Oil Refinery

storage tanks which rim the hillside (outside the land use survey area) are clearly visible from portions of downtown Martinez, they are not obvious from much of the residential neighborhood below them.

Residences vary substantially in size and some seem quite large. The residences also differ significantly in style and appearance, as is characteristic of individual design and construction; some residences have no garage while others have garages fronting on one street with the residence itself fronting another street. Though most residences are decades old, examples of newer residences and residences being remodeled do exist.

Undeveloped Land.

Despite proximity to the Civic Center, there are vacant parcels in this area, but most parcels are physically, functionally, and visually separated. Some parcels overlook the Civic Center but the view to the south is restricted by trees, the hillside, and existing development; these parcels are located near Marina Vista, Miller Avenue, Dineen and Lang Streets. There are 23 vacant parcels representing 4.9 acres of undeveloped land.

Five vacant parcels, representing 0.8 acres of undeveloped land, are located between Merrihew Drive and Grandview Avenue. Two vacant parcels, totaling one-third acre, are located west of Lafayette Street and north of Ward Street. One vacant parcel, totaling one-fifth acre, is located east of Willow Street and south of Henrietta Street. Many smaller undeveloped parcels, bordered by single family residences, exist but are limited for residential use by the steep slope or by parcel size or shape.

SECTION III - LAND USE FRONTING CIVIC CENTER.

Land uses located a block or more away from the Civic Center boundaries are buffered to some extent by development. But land uses fronting the Civic Center are, or will be, directly exposed to the Civic Center, its visual effects, and the activities carried on there, including associated traffic. Consequently, the land uses fronting the Civic Center are of particular importance.

North of the Civic Center is a narrow strip of property, between the Southern Pacific Railroad tracks and Marina Vista, used for public and County employee parking. Also to the north is the waterfront regional park under development by the East Bay Regional Park District and the City of Martinez aside from the Carquinez Straits. These areas view, primarily the Administration Building North Wing, the 12 story Administration Building, the Main Jail, and the County Finance Building.

To the west of the Civic Center boundary on Court Street are a variety of land uses; from south to north along Court Street the land uses are: 1) between Mellus and Thompson Streets - a law office in a refurbished single family residence; two single family residences, one of which is on the corner parcel; 2)

between Thompson and Green Streets - a multiple family structure consisting of 8 units, a single family residence, a duplex, and a certified public accountant's office in a two-story refurbished building; 3) between Green and Ward Streets - the County Assessor's Office and the County Veteran's Service Department; 4) between Ward and Main Streets - the Martinez branch of the County library and the County Probation Department which is in a remodeled building; 5) between Main and Escobar Streets - a vacant two-story building undergoing remodeling and the County Public Defender's Office; and 6) between Escobar Street and Marina Vista - the George R. Gordon Education Center, and parking lots. The Civic Center is clearly visible from all these land uses fronting on Court Street.

At the southwest corner of Willow and Mellus Streets is a church; on the southeast side of Pine and Mellus Streets are three single family residences and the County Credit Union. From these buildings only the top of the 12 story Administration Building is visible now due to existing structures on the block bounded by Pine, Mellus, Willow, and Thompson Streets. West of Pine Street are two multiple family residences consisting of four and three units respectively and two single family residences. A law office is located on the southwest corner of Mellus and Court Streets; it is a relatively new structure. The structures west of Pine Street and the law office have a clear view of the Civic Center because the Civic Center block opposite Mellus Street, at Court and Pine Streets, is presently undeveloped.

Fronting the Civic Center from the east are, primarily, single family residences. Residences have been constructed at varying elevations well above Willow Street due to the sloping hillside and consequently have an unobstructed view of the Civic Center. Access to these residences is presently via several streets including Main, Ward, Willow Streets and Grandview Avenue.

SECTION IV - LAND USE WITHIN CIVIC CENTER.

Land use within the Civic Center boundaries (see Section I) is comprised of public buildings, parking lots, medical offices, streets, and a few residences. The land surface in this area is relatively flat. With the exceptions of Marina Vista and Escobar and Willow Streets, streets are laid out in a grid pattern with most roadways being 35 feet in width.

The County buildings located within the Civic Center area are: the Administration Building - North Wing, the 12 story Administration Building, the County Finance Building, the present Main Jail, the Court House, and the Public Health Building. These buildings are all encompassed within the area bounded by Escobar, Willow Ward and Court Streets.

Of the buildings in Martinez, these County buildings are presently the largest. The 12 story Administration Building is the dominant structure. The other County buildings are of a more moderate size but are still larger than other buildings in the land use survey area, with the exception of the George R. Gordon Education Center which is 6 stories; the Public Health Building and the Finance Building have 3 stories and the Court House has 4 stories.

The exterior condition of these County buildings is very good to excellent. The buildings are of more recent construction than buildings in the CBD with the exception of the Finance Building. The Finance Building constructed of granite blocks, and the Court House constructed of stone are substantial buildings with columns on their front facades similar to many government buildings throughout the United States. The 12 story Administration Building and the Public Health Building are relatively modern structures, constructed in 1963-64 and 1957 respectively, and reflect newer architectural trends and newer building materials. The result of the differences in architecture and building materials for the major County buildings is a lack of architectural continuity.

Land uses within the Civic Center also include the U. S. Post Office on Court Street; the Martinez Historical Society Museum which is a renovated circa 1880 residence, at the northeast corner of Court and Escobar Streets; medical offices; and single and multiple family residential structures. Some of the residential units house several County departments which will be relocated elsewhere.

Most property within the Civic Center is under County ownership. The County also owns property just outside the Civic Center boundaries: 1) four parcels at the northeast corner of the Civic Center which include one parcel used for parking, two parcels that are undeveloped, and one parcel with a single family residence, 2) four parcels west of the Civic Center between Ward, Green, and Las Juntas Streets that are used for offices (see Section II), and 3) one parcel at the southeast corner of Green and Las Juntas Streets which is used for parking.

The exceptions to County-owned property within the Civic Center boundaries are: 1) the residential parcel at the corner of Mellus and Willow Streets and the parcel midway between Mellus and Thompson Streets on Pine Street; 2) two medical offices at the intersection of Pine and Thompson Streets; 3) the U. S. Post Office east of Court Street between Ward and Green Streets; and 5) Community College District property in the extreme northwest corner of the Civic Center.

The remainder of the land in the Civic Center is vacant, undeveloped, or used for parking.

SECTION V - IMPACTS.

As indicated in the preceding sections of this chapter, the Detention Facility site will be located in an area that already has, both within it and surrounding it, existing development. The Detention Facility building itself will occupy the southwestern portion of the six block area bounded by Ward, Court, Mellus, and Willow Streets; the U. S. Post Office Building will remain in its present location at the east intersection of Court and Green Streets; and the remainder of the six block Detention Facility site will consist of paved parking areas extending from Mellus Street to Ward Street, bounded on the east by Willow Street.

The proposed Detention Facility and parking lots will, consequently, alter the existing land uses within the Civic Center and the existing interfaces between

the Civic Center and the surrounding land uses. Both the Civic Center and the surrounding areas will be subject to: 1) the intensification of government use within the Civic Center; 2) changes in the visual characteristics of the Civic Center; 3) moderate changes in activities; and 4) changes in traffic flow and noise concentration. These alterations will impact on land uses both within the Civic Center and in the surrounding land use survey area (see Section I), especially those land uses fronting the Detention Facility site.

Impacts on Civic Center.

The Detention Facility site represents the completion of the County's intent, known for over a decade, to use and develop this property. For over the past 10 years, this portion of the Civic Center area has been in transition, with land uses, such as parking lots, and residential or office buildings, having only temporary status. The completion of the Detention Facility and the permanent parking areas will stabilize land uses in that the area will be committed to, and utilized for, a specifically known governmental use; it will also enable the County to make improvements in the area such as permanent landscaping to improve the general appearance of the Civic Center.

This stabilization of land use, however, will first require that existing land uses, in the six block area designated for the Detention Facility site, be razed.* At the present time there are a number of structures on the two block area bounded by Green, Pine, Mellus, and Willow Streets. These are: 1) between Thompson and Mellus Streets fronting Pine Street - a two-story single family residence and three one-story single family residences; 2) fronting Mellus Street from the north between Pine and Willow Streets - a two-story single family residence, two one-story single family residences, and a two-story multiple family residence, 3) fronting Willow Street between Mellus and Thompson Streets - a two-story single family residence with a garage and a one-story single family residence with a garage; 4) fronting Willow Street between Thompson and Green Streets - a two-story structure used as a County office, two small garages, and another two-story structure also used as a County office; 5) fronting Thompson Street from the south between Pine and Willow Streets - a garage, 3 single family residences, and two small garages; and 6) two medical offices at the Pine and Thompson Streets intersection, one on the southwest corner and the other on the northeast corner. The remaining area on these two blocks is either undeveloped or in use as temporary County parking lots.

At present the County does not own four of the structures. The two medical offices, the multiple family residence on the corner of Mellus and Willow Streets, and the single family residence in the middle of the area facing Pine Street bounded by Mellus and Thompson Streets. The County will have to acquire these properties before construction could begin. The razing of these land uses

*Consideration is being given to retaining one or more houses on Willow Street to provide a buffer between the government uses of the Civic Center and the residential uses on the east side of Willow Street.

will also require their relocation.

The use of the six block area for the proposed Detention Facility building and the permanent parking lots will eliminate the use of this land, in the future, for either governmental purposes, such as Sheriff's facilities, or needed County offices, or private uses such as housing or businesses. It will immediately require the County to relocate the two offices presently occupying buildings on the corners of Thompson and Willow Streets and of Willow and Green Streets. In the future, if the County needs additional offices, land or office space distant from the present Civic Center will have to be utilized, or the County will have to consider the possibilities of extending the current Civic Center boundaries. Any such future expansion will necessitate that the County reconsider its Civic Center Plan (see Chapter 19) especially since that plan originally indicated that the land now proposed for the Detention Facility building (at the corner of Pine and Green Streets) be used for an administration building to accommodate the expansion of County government.

With the completion of the proposed Detention Facility site, the County will have developed virtually the entire land area within the Civic Center boundaries. Inasmuch as the present Main Jail and temporary parking lots were already located in the Civic Center, the proposed Detention Facility and permanent parking lots themselves do not represent new land uses. The Detention Facility building does, however, represent a much larger, more intensive use for detention purposes in that it is roughly twice the dimensions of the present Main Jail and will cover approximately ten times the ground area. The Detention Facility building and the paved parking area will also establish a new and different appearance for the overall Civic Center. In sharp contrast to the 12 story Administration Building at the northern boundary of the Civic Center, the Detention Facility building will be a low, massive 4 story structure (about 45 feet in height). The size and style of the Detention Facility building will also be significantly different than the other buildings within the Civic Center, namely the U. S. Post Office, the Court House, and the Finance Building which front Court Street and are of 1950's, 1901 and 1930's architectural design, respectively.

The Detention Facility building will cover land areas which are now portions of Pine, Green and Thompson Streets. This location will have impacts both on the general appearance of the Civic Center and the traffic routes and noise concentrations related to the Civic Center.

The Detention Facility site will require the closure of Pine, Green, and Thompson Streets. The closure of Pine Street, as a corridor for Civic Center and CBD related traffic, will require the construction of a Pine Street Diversion extending from Mellus Street to Court Street at a diagonal across the southern portion of the block bounded by Mellus, Court, and Pine Streets. From Mellus Street, due to the closure of Pine Street, the focal points will be the Detention Facility building with the 12 story Administration Building in the distance; once on to Court Street the focal points will be the Detention Facility building followed

by the U. S. Post Office, the Court House, and the Finance Building; thus, the impact will be the existence of significant differences in the architectural designs within the Civic Center.

The construction of the Detention Facility site, especially of the Pine Street Diversion, will alter existing traffic patterns and noise concentrations, causing shifts to the Court Street arterial parking lot entrances.

The construction phase will be in four periods: 1) laying of sewer and water utilities on Court Street one block at a time, 2) the construction of the Pine Street Diversion from Mellus to Court Streets, 3) removal of existing development and excavation of the Detention Facility site, and 4) the actual construction of the Detention Facility building and the parking lot areas. During the overall construction, traffic patterns will be minimally altered with the laying of utilities on Court Street and the construction of the Pine Street Diversion. These alterations will reduce access to the Civic Center buildings fronting Court Street. These buildings will also be subjected to increased noise due to construction activities. Following the construction of the Pine Street Diversion, Court Street will be the permanent traffic route to both the Civic Center and the CBD. Consequently, the buildings fronting Court Street will be permanently subjected to increased traffic and the related noise (see Chapters 16 and 17 - Traffic and Parking, and Noise).

During the construction of the Detention Facility site, land uses within the Detention Facility site will be on a temporary basis. Temporary parking lots will be shifted from one section to another within the six block area. Therefore, traffic patterns and noise levels will vary from time to time. But, generally, throughout the entire construction phase traffic, traffic noise, road repair and construction noise, and building construction noise will all be present in the area where the Detention Facility building itself is being erected. As a result, the land uses in this area will be exposed to varying degrees of noise and inconvenience.

Once the Pine Street Diversion is complete, permanent traffic routes will become established, these will, logically, be in the direction of the CBD using Court Street and in the direction of the Civic Center parking lot entrances/exits. The Civic Center parking lot entrances/exits will be located as follows: two on Ward Street and 1 on Mellus Street. The access route to the Ward Street parking lot entrances/exits will be Court Street; the Mellus Street parking lot entrance/exit is located ½ block east of Mellus and Pine Streets. Consequently, the land uses on Court Street, and at the corner of Pine and Mellus Streets will be exposed to this traffic and related noise. This traffic does not represent a new condition for land uses within the Civic Center; but the location of the parking lots on the eastern side of the Detention Facility site and the Detention Facility building on the southwestern portion of the site, may increase traffic impacts for the land uses located there.

Impacts on Land Use Survey Area.

The Detention Facility site will alter, in varying degrees, the potential for changes in the land use survey area and the relationships now existing in each interface. These impacts will be examined on a geographic basis for the areas surrounding the Civic Center with particular attention given, within each geographic region, to the land uses fronting the Detention Facility site.

Impacts on Land Use North of Civic Center.

Due to the fact that no changes in existing land uses will be made north of Ward Street, little impact should result on the area north of the Civic Center boundary, Marina Vista. Visibility of the Detention Facility site will be largely obstructed by the existing County buildings, namely the Administration Building - North Wing and the 12 story Administration Building.

Impacts on Land Use West of Civic Center.

The Detention Facility site may have a significant potential impact on land uses to the west, especially on those fronting Court Street. North of Ward Street little change should occur in traffic patterns since Main and Escobar Streets already receive traffic and since no changes will occur within the Civic Center area north of Ward Street.

South of Ward Street, on Court Street, increases in traffic will result from the closure of Pine Street and the location of parking lot entrances/exists on Ward Street east of Court Street.

The west side of Court Street, north of Green Street, is comprised of office uses. Between Mellus and Green Streets (the area of greatest impact) are a mixture of offices, single-family and multiple family residential uses. Also located in this area, but not fronting Court Street, are a single family residence, two multiple family residences, an office and a parking lot. The proximity of the new Civic Center development may increase the desirability of land on the west side of Court Street for offices and decrease its desirability of continued residential use. Inasmuch as this area borders the CBD, expanded office use would not represent a dramatic change in land use, but the location also adjoins a large residential area to the south which may need protection from intrusive uses. Moreover, these land uses already experience non-residential traffic although it must be anticipated that the area will experience increased noise levels and traffic congestion.

At present the land uses fronting Court Street between Mellus and Green Streets are directly across from undeveloped land in the Civic Center; the proximity of the new Detention Facility to these land uses will decrease the sense of open space they now experience, which may also decrease their desirability for residential uses.

Impacts on Land Use South of Civic Center.

The area to the south of Mellus Street is a mixture of single and multiple family residences and various non-residential land uses including the County Employees' Credit Union and law offices. The primary impact of the Detention Facility site will be on land uses fronting Mellus Street; the area fronting Mellus, to the east of Pine Street, will be exposed to an open space on the other side of which will be the Pine Street Diversion; the area fronting Mellus, to the east of Pine Street, will front the parking lot area and entrances/exits of the Detention Facility site. These land uses include the Credit Union at the corner of Pine and Mellus Streets, single family residences, and a church at the corner of Mellus and Willow Streets. These structures had previously been buffered by existing buildings on the blocks between Mellus and Thompson Streets. This will no longer be the case, and these structures will be directly exposed to both more traffic resulting from the diversion and the new land uses within the Detention Facility site. The result of this new interface will be increased visibility of the entire Civic Center, increased traffic and noise levels, and increased proximity to Civic Center buildings and parked cars. These impacts may make the area more desirable for conversion to non-residential uses, and land use controls may have to be exerted by the City of Martinez to keep the block face in residential use (see Section VI - Mitigation Measures).

Impacts on Land Use East of Civic Center.

The land uses to the east, fronting Willow Street, will not be exposed to increased traffic due to the fact that Green and Thompson Streets will be closed and no parking lot entrances/exits will be located on Willow Street. The removal of residential structures from the Detention Facility site will, however, directly expose the land uses on the east to the Detention Facility site; in fact, since the residences are constructed on the hillside, they will have clear visibility of the entire Civic Center area. The closure of Green and Thompson Streets, between Court and Willow Streets, will reduce access to the residences fronting Willow Street. This could be somewhat offset, however, with the extension of Willow Street to Ward Street which would permit access from both Ward and Mellus Streets. This would also have the effect of increasing traffic volumes on Willow Street; if Willow Street is left as a cul-de-sac, the traffic would be reduced, but access will be limited to Mellus, Henrietta, and Susana Streets.

Since the land development by the County in the area will be more certain, the impact should stabilize this residential area for continued residential use. The overall improved appearance in the Civic Center area should also present a more desirable appearance increasing the feasibility for continued residential land uses in this area overlooking the Civic Center.

SECTION VI - MITIGATION MEASURES.

A number of mitigation measures to decrease the impacts on both the Civic Center and surrounding area land uses have already been accounted for in the proposed Detention Facility project. These include:

1. The structure is to be located at the lower elevation, southwestern corner, of the Civic Center area to minimize effects of building height on views from the east hillside residential area;
2. The structure will be located away from streets which front primarily residential uses so that a spatial separation will serve as a buffer to reduce noise and activity and minimize the visual effects;
3. The Detention Facility building has been designed to limit visibility of its operation from surrounding areas including the enclosure of the intake area sally port and of the roof tops and outside exercise areas;
4. The Detention Facility site has included landscaping and location of parking lot entrances/exits to buffer the adjoining residential areas at the east and south from the Civic Center activity and to increase compatibility with the adjoining areas; and
5. The Detention Facility capacity has been limited for several reasons; this has the effect of reducing the size of the proposed structure;

Further mitigation measures to reduce the impacts of the Detention Facility site on land uses include:

6. Cooperate with the City of Martinez on land use planning and controls in the areas adjoining the Civic Center to protect them from detrimental changes;
7. Initiate a program to prepare a new Civic Center Plan incorporating both the changes resulting from the Detention Facility project and the changes in County needs which have developed since the 1963 Civic Center Plan was written.

Chapter 19

PLANS AND POLICIES

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Planning Department
January, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	19-1
THE 1963 CONTRA COSTA COUNTY CIVIC CENTER PLAN	19-2
THE COUNTY GENERAL PLAN	19-6
THE MARTINEZ GENERAL PLAN	19-10
OTHER PLANS	19-15
IMPACTS	19-16
MITIGATION MEASURES	19-18

ILLUSTRATIONS

MAPS	
Map 1: Contra Costa County Civic Center Site Plan	19-5
Map 2: Contra Costa County General Plan (1963 Land Use and Circulation Plan)	19-8
Map 3: Martinez General Plan	19-11

INTRODUCTION

State guidelines provide that Environmental Impact Reports prepared under the California Environmental Quality Act (CEQA) address the relationship between public plans and development policies. These policies are typically contained in the General Plans (defined later) and related special purpose plans of local units of government; however other documents and the plans of other levels of government also may be relevant. The purpose of this Background Report chapter is to identify the plans and policies associated with the proposed Contra Costa County Detention Facility, and to indicate how they relate to the project.

The focus of this chapter is government plans dealing with physical development subjects such as land use, circulation, and facilities in combination with one another. These are often termed "general," "comprehensive," or "community" plans. Related plans (or programs) for services are primarily covered in other chapters, such as the County's financial planning process in the Capital Improvements Policies chapter and criminal justice planning in the Justice Facilities chapter (Chapters 23 and 24).

The matter of the proposed Detention Facility's relationship to public plans and policies is particularly important because its predecessor, the "Criminal Justice Detention Center," was opposed locally on community planning considerations. There was complaints about the proposed Center's height, placement, building design, traffic generation and parking effects with respect to their impacts on adjoining areas. The County's decision to reconsider and redesign the project partially resulted from this opposition.

There are three additional planning policy considerations that are important to evaluating the proposed project. One is that the Detention Facility is a County project proposed for a location in an incorporated city, Martinez. This situation involves the provisions of the plans of two jurisdictions, the partially conflicting objectives of two different kinds of local general-purpose government (a city and a county), and ambiguous legal and moral questions of one unit of government's obligations to another government. The second policy consideration is that the termination of the former "Detention Center" plans made obsolete a considerable body of prior planning decisions. The third policy consideration that the contents and uses of government plans have changed during the long history of the project, as public attitudes and objectives have changed, resulting in lags and gaps between some government plans and the characteristics of the current project. These considerations will be discussed in the course of reviewing the several applicable plans.

This chapter will cover, in order, the County Civic Center Plan, the County General Plan and the Martinez General Plan. It also will be noted that the plans of other levels of government are not directly applicable to the project in terms of this chapter's subject coverage.

THE 1963 CONTRA COSTA COUNTY CIVIC CENTER PLAN

The County Civic Center Plan (Contra Costa County Civic Center Plan of 1963) is discussed first because it provided the basis for the civic center land use policies in the 1963 County General Plan (Land Use and Circulation Plan) and the City of Martinez' 1964 General Plan. It was adopted in principle by the Board of Supervisors in 1963 and it has endured as the County's general policy for civic center development to the present time. In 1975, it was officially re-affirmed as Board policy in connection with the former "Detention Center" project, when the Board observed, "...the 1963 Civic Center Master Plan is, and has been, its policy guide for County development there and...the plan still provides a suitable and adequate basis for evaluating construction proposals...." (Resolution 75/440) Since it has not been rescinded at this writing (January, 1977) it remains in effect, but many of its proposals are either obsolete or will be if the Detention Facility project is built.

There are two main reasons for the plan's longevity in unchanged form: history and its legal status. The first is the more important. The plan was commissioned in 1962 at a time when the County government had only recently committed itself to staying and expanding in Martinez by the decision to build the 12-story Administration Building. Preceding this, during the 1950's, it had become obvious that the County government was going to grow in employment and functions for a long time (it did into the 1970's), and at least internal consideration was given to building a new physical plant at an outlying location. However, interests within the County government favoring keeping the primary County center in its historical location in downtown Martinez prevailed (these included the City's political and economic leaders), and the Administration Building quickly followed. Design planning for it was started in 1959-1960, and it was completed in 1964. The Civic Center Plan was prepared to relate future County physical plant expansion to the Administration Building and the existing public buildings, including the Main Jail, Courthouse, Finance (old courthouse), and Health buildings, as well as the U.S. Post Office and City Library.*

The next round of construction contemplated when the Civic Center Master Plan was adopted was to be for new courts and a new jail. However, controversies intervened to the extent that the "next round" has evolved into the present Detention Facility proposal. The most significant change that has occurred in a physical sense in over a decade is that the County has acquired most of the land within the Civic Center area demarked in the Civic Center Plan and converted much of it to permanent and temporary parking and office use (see Chapter 18).

*The probable intent of the plan to be a step in the building process is reflected in the situation that the planning consulting firm that prepared it, Ruth & Krushkhev, was hired by the architect for the Administration Building and first jail project (Confer and Anderson), not directly by the County.

The second reason for the Civic Center Plan's longevity is its legal status, or more accurately, its lack of particular status under ordinance or statute. The plan was adopted in principle by the Board of Supervisors as its own policy and honored over the years by use and reference within the County government, but it was never adopted as part of the County General Plan or other kind of plan provided for in County ordinances or State statutes. The difference was of little consequence in 1963 but it became much more important by the mid-1970's because State legislation tightened conformance by local units of government with their general plans. As a result, local units of government were motivated to routinely update their plans. Contra Costa County made many revisions to its general plans in response to State legislation during the period. If the Civic Center Plan had been made part of the County General Plan, there is a likelihood that it would have been amended to better accommodate proposed jail projects, and updated in the process. As the Board's own policy, however, there was no requirement that the plan be amended as a prerequisite to taking action on the project, and it was not revised.

The plan was described in the Environmental Impact Report for the now abandoned "Detention Center" as follows:

"The Contra Costa County Civic Center Plan is a schematic plan, it reflects policy decisions that were made in the 1950's to retain the county seat in downtown Martinez, to centralize County functions there (but not exclusively), and to minimize the amount of land taken by the County in order to preserve the viability of the Central Business District and nearby residential districts."

The stated objectives of the plan were:

"The complex of office buildings and courts in Martinez shall be the headquarters location for Contra Costa County government functions."

"Relate the County Civic Center to the City of Martinez uses and possible state and federal government activities, facilities and buildings."

"The Civic Center will not be an isolated Complex detached from all that surrounds it but rather shall be functionally and architecturally compatible with the immediately surrounding downtown and residential uses and the City of Martinez as a whole."

"Organize circulation and parking facilities to serve the Civic Center so that they are in harmony with the City of Martinez Circulation Plan including County-wide freeways and expressways."*

The resulting plan concept called for a composition of old and new public buildings, both low and tall in height, located on an elongated "superblock" that extended along the base of Martinez Ridge from Marina

*Contra Costa County, Draft Environmental Impact Report, Criminal Justice Detention Facility (Center), 1975, pages 100 and 102.

Vista to Mellus Street (see Map A). The superblock was to be created by transforming Pine Street, and streets crossing it, into a pedestrian mall or plaza. To provide adequate circulation, a circumferential street system was planned using Court Street on the west and Willow Street, extended, on the east. Parking was to be accomplished in lots and structures located on the periphery of the superblock. Significantly, the plan recommended a new jail and sheriff's facility at the location where the previous "Detention Center" was proposed.

The Civic Center Plan concept was typical of large building complexes designed in the 1960's (or the 1970's for that matter) for large units of government. Contra Costa County already had a large population and, at the time, it was expected to reach one million population by 1985. No so typical, however, was the proposal to build such a complex in a city of the small size and building scale of Martinez.

The 1975 EIR found the previous "Detention Center" project to basically conform to the Civic Center Plan. The present Detention Facility project can be better said to conform in a limited or partial sense. It pertains to uses (jail and courts) addressed in the plan, and it was designed in reference to the Civic Center area demarked by the Plan. Its setting in a proposed "superblock" to be created by diverting Pine Street traffic to Court Street north of Mellus Street is in keeping with the concepts of the original plan. However, the building is too large and differently placed to conclude that it unequivocally conforms to plan, and it would preclude the realization of some of the plan's proposals, such as a future administration building at Green and Pine Streets.

Interestingly, the current project now proposes a Courts Addition east of the Post Office in almost the same location that was proposed in 1963.



CONTRA COSTA COUNTY CIVIC CENTER

SITE PLAN DEVELOPMENT TO 1985

EXISTING BUILDINGS

- 1 Court House
- 2 Administration
- 3 Hall of Records
- 4 Health Department
- 5 Post Office

PROPOSED BUILDINGS

- 6 Administration Expansion
- 7 Health Addition
- 8 Elevated Corridor
- 9 Jail & Sheriff
- 10 Courts Addition
- 11 Administrative Services
- 12 Jr. College Administration

PROPOSED PARKING AREAS

- 13 Three Levels - 725 cars
- 14 One Level - 15 cars
- 15 Two Levels - 210 cars
- 16 Three Levels - 300 cars
- 17 One Level - 50 cars

1963



THE COUNTY GENERAL PLAN

The General Plan is a city or county's basic policy for growth, the use of land, and development within its jurisdiction. It is required by state law, and must be adopted by the local governing body. It consists of several parts, largely mandated by statute, some of which deal with individual subjects and are called elements, and some of which are multi-subject sub-area plans covering particular geographic areas within a jurisdiction. The Contra Costa County General Plan consists of a number of components, all adopted by the Board of Supervisors, but those that are directly applicable to the Detention Facility project are the land use, circulation, noise, safety, and seismic safety elements. These are covered below, except for noise, which is discussed in Chapter 17.

The areas covered by general plans are not mutually exclusive. At one level, cities regularly plan for adjoining unincorporated areas anticipating that they will be annexed, while counties practice "sub-regional" planning by taking in cities in their plans. The County General Plan shows broad categories of land use (etc.) within Martinez and other cities in order to help account for county-wide conditions and trends. Since these forms of extra-territorial planning convey no new powers, one unit of government always has primary jurisdiction. At another level, County government performs certain functions countywide and this activity is reflected in recommendations in its General Plan. Existing and proposed County facilities, such as the County Civic Center, are accounted for whether they are located in incorporated or unincorporated territory.

A local government agency proposing to undertake a public project is required by Sections 65401 and 65402 (mainly) of the Government Code to submit its proposal to the planning agency having jurisdiction in the project area for an advisory review of its conformance with the applicable general plan. This review requirement is called "mandatory referral." It is a feature of many states' planning enabling legislation, and it is provided for the purpose of ensuring that general plans receive consideration when local governments make improvements and build facilities. It is also a means of insuring that agencies and local governments coordinate with one another. The "mandatory referral" requirement, however, only compels coordination, not conformance. A government usually has the ability to override its own general plan to approve its own projects, or to overcome a negative finding by the planning agency or another unit of government.

The Detention Facility project will be submitted to the City of Martinez for a "mandatory referral" review as well as to the County Planning Commission. The relationships between the proposed project and the County General Plan is discussed in this section and its relationship with the Martinez General Plan is discussed in the following section.

The Detention Facility appears to readily conform to the Land Use Element of the County General Plan. The applicable plan component here is

the Land Use and Circulation Plan of 1963.* Its plan map (see Map B) shows an area of "Public" category land use in the County Civic Center area (defined in the Civic Center Master Plan) where the proposed project would be located. The Detention Facility is a public, or governmental use. It should be noted, however, that the area so designated is highly generalized in the original plan, and the Land Use Element neither sub-categorizes the Public classification, nor provides specific height, bulk or density criteria for it. This does not cast doubt on the project's conformance, but rather indicates that its conformance is based on very general grounds.

The Circulation Element of the County General Plan is relevant to the Detention Facility project in the sense that the plan's recommendations in the Martinez area are so general that the project cannot be said to disagree with it. The Circulation Element shows an arterial road facility on the Pacheco Boulevard-Pine Street corridor leading to the Civic Center. At its level of generality in the plan, it would not matter if this corridor were diverted to Court Street, as in the present project, or kept on Pine Street.

The Safety Element pertains to the Detention Facility and other County projects wherever they are located within Contra Costa County. The main public safety considerations for this project are flooding and fire. In the first case, the Facility will be built above the 100-year floodplain, which is also a requirement of the Federal Flood Protection Act of 1973 (see Chapter 11). Fire protection is a special problem in high-occupancy and involuntary occupancy buildings. On the subject of fire service, the 1975 EIR noted that:

"Fire protection services are provided via the Contra Costa County Consolidated Fire District. The first response station is located on the corner of Alhambra and Jones a little less than one-half mile away and has a response time of less than one minute. The second response station is located near the corner of Martinez Avenue and Shell Avenue.

"Equipment at the first response station includes two 1,000 gallon per minute pumpers and a 75-85 foot aerial ladder. A 100 foot aerial ladder is available from the station located at Willow Pass and Grant in Concord. Response time from this station is approximately 15 to 20 minutes."**

*Most of the County's Land Use Element has been updated since 1963, especially in the unincorporated area. The particular area under discussion here, however, is a residual area that was not formally updated.







**Contra Costa County, op. cit., p. 94. It is noted that the reference to the Concord Station was made in the context of the kind of equipment that might be needed to fight a fire in a high-rise structure.

CONTRA COSTA COUNTY GENERAL PLAN
(1963 LAND USE AND CIRCULATION PLAN)



LEGEND

Land Use

- | | |
|---|--|
|  Commercial |  Heavy Industrial |
|  Public |  Multiple Family-Medium Density |
|  Single Family-High Density |  Major Arterial |

The present project is expected to be preferable to the previous "Detention Facility" project (a 6-story, windowless design) because of its lower height, modular construction, and ventilation characteristics. The architect is giving attention to the use of secured outdoor spaces for evacuation and high-volume smoke exhaust systems in addition to customary sprinkler and fire hose installations. There are no major gas or oil transmission lines in the immediate vicinity of the project. The attention given in the design of the project to inmate safety in the event of a fire would be expected to constitute compliance with the Safety Element.

The Seismic Safety Element mainly requires that geologic studies be conducted in areas susceptible to faulting or ground failure, and that high occupancy buildings be designed to protect lives and "critical structures" be designed to remain functioning in the event of earthquakes of characteristics probable for the location. In satisfying the first requirement, the Public Works Department contracted for a special fault study (the 1975 EIR for the previous project disclosed the possibility of an earthquake fault in the vicinity of the Civic Center) and the Planning Department contracted for the geologic study comprising Chapter 7 of this Background Report. The second requirement is addressed in Chapter 7.

THE MARTINEZ GENERAL PLAN

The County government, as previously noted, must submit the Detention Facility proposal to the City of Martinez' planning agency (planning commission) for review of the project's conformance with the City's General Plan. The General Plan in this instance is the City's revised plan of 1973. Its land use and transportation policies in the vicinity of the Civic Center are summarized in Map C.

The 1973 version of the City's plan is a comprehensive revision of the former (1964) plan, and is contained in a new plan document entitled Martinez General Plan. It was developed for the City by the firm of Sedway/Cooke who utilized studies by a combination of consultants and city staff for background and components. Among its changes, it added sections that addressed the individual plan elements requires by the state legislature, and subdivided the City and its environs into several planning areas.

Martinez has provided for the County Civic Center by classifying the area roughly bounded by Marina Vista, Court, Thompson, and Willow Streets as Community Facilities-Governmental on its plan map. Surrounding this public enclave are various categories (densities) of Residential use to the south and a combination of Industrial (railroad) and Open Space on the north. Except for the Open Space area, which provides for a recently approved regional park, the plan's land use designations almost entirely account for existing development.

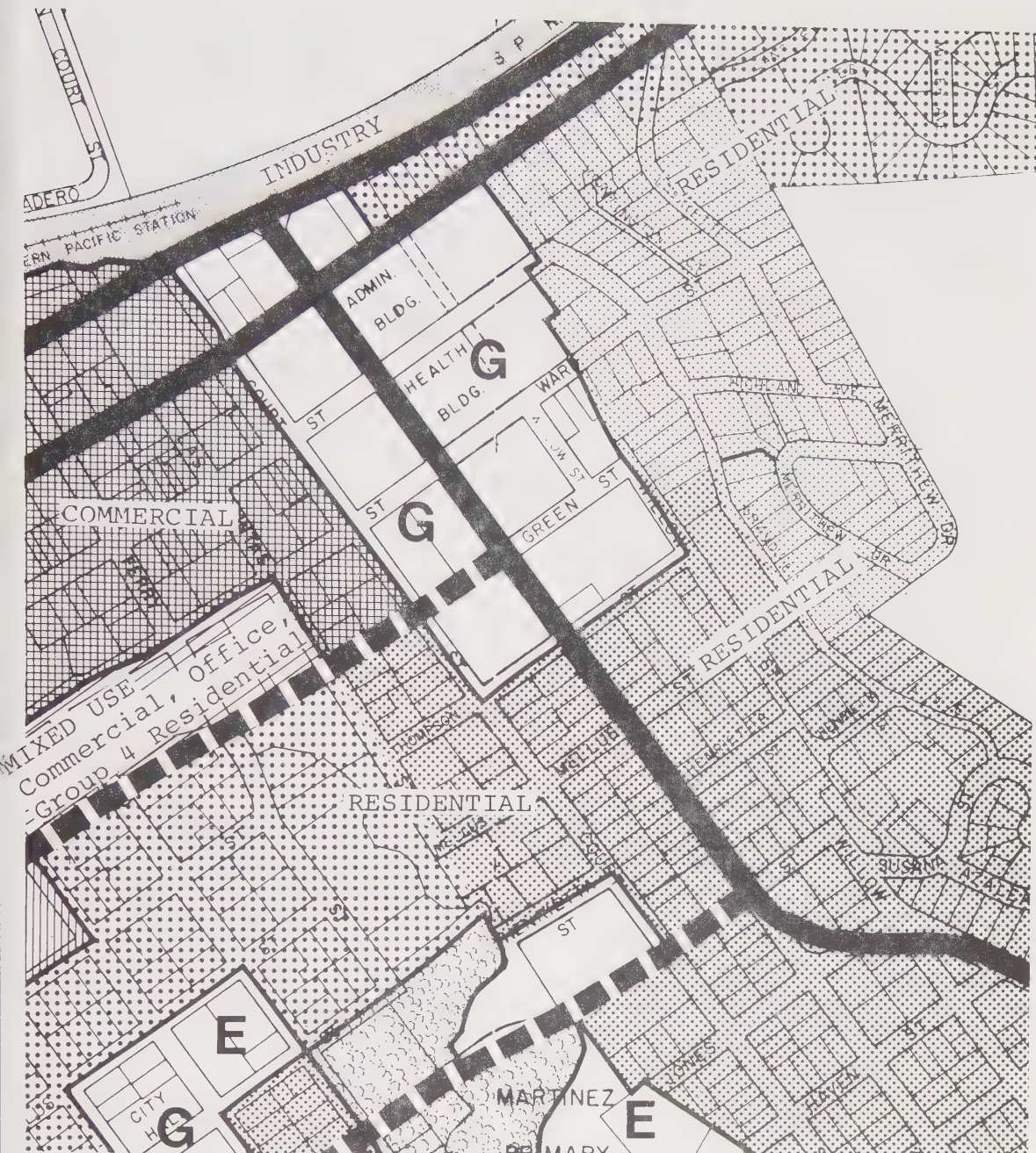
Access to the Civic Center area in the plan is to be provided by arterial street facilities on Pine Street/Pacheco Boulevard and the combination of Escobar Street and Marina Vista. Complementing the arterial-class streets, the plan provides for collector street facilities (minor arterials) on Green and Susana Streets west of Pine Street.

In addition to the land use, circulation, and facilities policies included in the plan's text and plan map, it contains several objectives that are pertinent to the Detention Facility project. These are:

"The City and the County should keep mutually informed about significant planning decisions and other proposed public actions which affect Martinez.

"An agenda of current unresolved planning problems including but not limited to, parking, traffic circulation, and current County space requirements should be developed and discussed by City and County staff for the purpose of arriving at mutually acceptable solutions. Other actions which may affect the City of Martinez can be anticipated.

"The County should be discouraged from encroaching further into developed residential neighborhoods of taking any action that threatens the stability and value of privately owned parcels.



CIRCULATION

Arterials (2 lanes each way)

Collectors

COMMUNITY FACILITIES

Governmental

Schools

OPEN SPACE, PARKS AND RECREATION



CONTRA COSTA COUNTY
DETENTION FACILITY

Martinez General Plan

"The viability of the County Master Plan and existing County policy toward creation of a concentrated Civic Center complex should be examined and prevailing plan assumptions reviewed.

"Any further expansion of County government shall respect the need to upgrade and consolidate uses within the central business district through careful site selection of professional and office space.

"Height, bulk and uses of proposed governmental structures shall conform to the character of the community."*

The changes Martinez made to its General Plan in 1973 not only updated its contents but accomplished a shift in the City's development policies. For the older area of the City in and around the central business district and County Civic Center area, the new plan substituted policies emphasizing the preservation and conservation of existing development for policies in the previous (1964) plan that were more favorable to growth and redevelopment. Where the 1964 plan had as a goal:

"To encourage the redevelopment of the Central Business District, the market should be bolstered through the location of higher density housing contiguous to the employment and retail facilities in the area."

The 1973 version stated:

"Broad scale clearance programs aimed at eliminating commercial blight and 'importing' substantial numbers of new residents into Central Business District cannot be justified in market terms and would tend to impair the vary qualities which distinguish Martinez from other commercial centers."

The consequences of these new policies were more conservative proposals for land use expansions and circulation facility improvements throughout the central area of the City.

In the Civic Center area, the 1973 plan made several specific changes. First, the "Government Center" area previously identified in the land use element was reduced in size by reclassifying the blocks between Mellus and Thompson Streets and another area between Escobar and Marina Vista Streets to residential land use. Second, the circulation element proposals calling for the connection of Pine to Court Streets and the extension of Willow Street, both to provide for a circumferential circulation system around the Civic Center, were expressly deleted. And, third, the evaluation of appropriate height, bulk and setbacks for County buildings was defined as corresponding to the established character of the

*City of Martinez, General Plan, 1973, Section 30.

community (later operationally defined as conforming to Government Facilities zoning, and certain requirements of adjoining residential zoning districts).*

It is probable that the proposed Detention Facility will be found to be consistent with the Martinez General Plan in terms of the primary characteristic of land use. The Detention Facility proposal is for a public facility to be operated by the County government, and intended to house traditional County courts and detention functions. The City's testimony at the public hearings for the 1975 project's EIR indicated that it was consistent from a land use standpoint. However, the new Detention Facility project has features that probably do not conform to specific provisions of the City's plan.

The proposed project appears to differ from the Martinez General Plan in the character of its building, in its incursion into the planned residential area between Mellus and Thompson Streets, and in the diversion of Pine Street to Court Street. With respect to the first item, the design "style" of the building resembles neither existing public or privately owned buildings in the area, and the bulk of the building with a floor area of 186,000 square feet is larger than even the County Administration Building. The area between Mellus and Thompson Streets is indicated for residential use by both the City's General Plan and its zoning ordinance. The project requires diverting Pine Street to Court Street, but this linkage was expressly diverted from the plan's Circulation Element during the 1973 revisions.

Several other attributes of the project may be found to not conform to the City's general plan or comply with its zoning ordinance when the project is examined in detail. Its height, about 46 feet, is taller than would be allowed in some adjoining zoning districts. Its setbacks might comply, or approximately comply, with the city's requirements around most of the building's perimeter, but it appears that the building's close proximity to the Post Office property lines will create technical violations of the Zoning Code. There are other differences, but they all point to the fact that the proposed Detention Facility is a unique building with characteristics and features that do not conform to provisions of the City's General Plan and zoning ordinance.

The differences between the City's General Plan and the proposed project are not necessarily conclusive. Policy is always in a state of evolution. In the case of the Detention Facility project, both local residents and City officials have participated in design process that was initiated in 1976 and is on-going at this writing. It is possible that the project is acceptable to the City, and in keeping with its interests, despite differences with particular provisions in its Gen-

*City of Martinez.

eral Plan and zoning ordinance. If this is the case, the City can indicate its agreement to the County, and later amend its general plan and zoning.

As already noted, the City cannot compel the County to conform to either its plan or zoning. The County must submit its proposal to the City for an advisory review but can proceed after taking this step. In practice, however, the County probably would try to reach an agreement with the City. This is to say that agreement between the two local governments is a form of public policy, and especially pertinent in implementing public projects.

OTHER PLANS

The plans of several regional agencies cover the Martinez area but their recommendations are not directly applicable to the Detention Facility project.

The Association of Bay Area Government's Regional Plan does not contain detailed land use, circulation, or facilities recommendations that would affect the project. Because no state or federal grants are involved in the construction of the Facility, the project is not required to be reviewed by ABAG in its regional clearinghouse capacity and or the provisions of the federal Office of Management and the Budget Circular A-95.

The Bay Conservation and Development Commission's Bay Plan covers the Martinez waterfront adjacent to the County Civic Center, but the Civic Center is too far inland to require their review. (The adjoining regional park which is under development on the waterfront implements the Bay Plan by providing for wetlands preservation and public waterfront recreation access.)

The Metropolitan Transportation Commission's Regional Transportation Plan does not affect local street modifications and improvements of the level involved in the project. No road funds subject to MTC review are proposed to be used in the project.

The East Bay Regional Park District's plans do not cover the County Civic Center. The adjoining Martinez Regional Shoreline Park, however, is an East Bay Regional Park District facility which is being developed in accordance with that district's overall plan and a specific development plan (Martinez Waterfront Land Use Plan) adopted by the district and the City of Martinez.

In addition to the above, it is acknowledged that these agencies, and others, will be given the opportunity to review this project's EIR. It is also acknowledged that several special districts, including the major utilities, have plans that indirectly affect the project.

IMPACTS

Because of the long and controversial history of the Detention Facility project, it is easy to assume that the apparent consensus being reached between the County government and other parties (in the present proposal) over development in the Civic Center areas represents a radical change in public policy. In broad perspective this is not the case. The project actually re-affirms the basic City-County consensus and County decisions of the 1950's to keep and expand the main County administrative center in its traditional location on the east side of the Martinez business district. In its specifics, however, the project is sufficiently different from any facility previously contemplated by the County government or anticipated by the City of Martinez that its adoption will re-make public policy for development in the Civic Center, and both units of government may find it desirable to amend their adopted plans accordingly.

For the County, the project has finally made the 1963 Civic Center Master Plan obsolete as a concept for development and as a guide to be followed for subsequent projects. The Detention Facility will occupy the space proposed in 1963 for other uses. It's horizontal form will create a far different design for the Civic Center than the "towers-in-a-plaza" concept of 1963. The need for parking (for the courts addition, if not for the Detention Facility) as well as the need for office space indicate that the County should reconsider the Civic Center boundaries delineated in 1963 or plan for new facilities outside the Civic Center. Clearly, however, the Detention Facility project has created a need for a new County Civic Center concept and plan. (This has no necessary effect on project timing).

The previously noted finding that the project evidently conforms to the County General Plan means that the County can approve the project without first having to amend its General Plan. This has been a recognized advantage of the Civic Center location for the Detention Facility throughout the current program.

The above finding (on County General Plan conformance), however, is partially an outcome of the minimal contents and highly generalized policies of the County General Plan as they now pertain to the County Civic Center area. This minimum coverage simplifies project review in the present case, but it is likely to be disadvantageous to the County in the future when subsequent projects are being considered in the area. Actions on the Detention Facility project will enable the County to proceed with planning for other capital projects; some, such as a future courts building, probably will be located in the Civic Center. It will create new relationships with adjoining areas. Along with a new Civic Center Plan, the County should update its General Plan.

The Detention Facility project, if built, will also make parts of the Martinez General Plan obsolete. Specifics in the existing City General Plan that are contrary to the project include land use in the blocks

between Thompson and Mellus Streets and the Pine Street diversion. Following the Detention Facility project, the City will probably face questions of Civic Center expansion in common with the County, and with land use and circulation matters affecting the area of downtown Martinez adjoining the Civic Center.

MITIGATION MEASURES

1. In view of the recent history of differences over Civic Center development, agreement on the project proposal itself is a mitigation measure in the field of public policy. If it is approved by the County government and concurred with by the City of Martinez, it constitutes a new consensus for development in the area that can be used by both parties as a basis for the project to proceed and for future individual and joint planning.
2. Formal arrangements should be made to enable the City and the County to coordinate their future efforts on studies, plans and projects affecting the Civic Center area. These arrangements should provide for liaison by both staff and elected officials, and may include representation on one another's study committees.
3. The County should make its current and future plans and studies dealing with the Civic Center available to the City of Martinez to provide background for the City's planning efforts.
4. The County should update its Civic Center Master Plan to dispose of obsolete recommendations and address new needs. The plan should be based on parking, office space, and design studies. The plan (or a version of it) should be adopted as part of the County General Plan.
5. The County should expand the coverage of its General Plan Community Facilities Element to include County facilities proposals (including future Civic Center improvements) to better relate the County's building and service plans to the overall development of the County.
6. The County should update the land use and circulation contents in its General Plan as they pertain to Martinez and other incorporated areas to reflect current information. Even though the County uses current city plans to evaluate projects within incorporated areas, the Detention Facility project demonstrates that there are occasions when it must also evaluate public projects in an incorporated area for conformance with its own General Plan.

Chapter 20

VISUAL ANALYSIS

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

SEDWAY/COOKE
Urban and Environmental
Planners and Designers
February, 1977

VISUAL ANALYSIS

BACKGROUND REPORT FOR THE CONTRA COSTA DETENTION FACILITY ENVIRONMENTAL IMPACT REPORT

CONTENTS

PART I: EXISTING CONDITIONS

PART II: ASSESSMENT OF VISUAL EFFECTS OF THE
PROPOSED DETENTION FACILITY DESIGN

PART III: MITIGATION MEASURES

ADDENDUM: ASSESSMENT OF SENSORY IMPACTS
OF INTERNAL FACILITY DESIGN

PART I: EXISTING CONDITIONS

CONTENTS

I. INTRODUCTION

II. CHARACTER OF THE PHYSICAL SETTING

III. EXISTING URBAN FRAME

- Urban Texture
- Significant Features

IV. THE SITE

- Character of the Site
- Views from the Site

V. RELATIONSHIP OF THE SITE TO ITS SURROUNDINGS

- Viewshed
- Viewpoints
- Views from Approaching Routes

LIST OF FIGURES

FIGURE 1. Natural Features and Road Patterns

FIGURE 2. Urban Texture

FIGURE 3. Significant Features

FIGURE 4. Site Location

FIGURE 5. Site Features and Views

FIGURE 6. Major Site Vegetation

FIGURE 7. Viewshed

FIGURE 8. Viewpoints

FIGURE 9. Views from Approaching Routes

PART I: EXISTING CONDITIONS

I. INTRODUCTION

The first part of the Visual Analysis of the proposed Contra Costa County Detention Facility consists of documenting existing visual conditions which will be affected by the project. Existing conditions were inventoried through data analysis and field surveillance. They are described in Part I to provide a background for subsequent comparative impact assessment which follows in Part II.

The sequence of the discussion of existing conditions moves from an overview of the larger physical setting to a more detailed description of the project site, followed by a discussion of the visual relationship of the site to its surroundings and a delineation of areas of potential impact.

II. CHARACTER OF THE PHYSICAL SETTING

The older part of the town of Martinez is clearly defined by its natural setting. Wooded hills along the east and west boundaries, the Franklin and Martinez ridges to the south, Carquinez Strait and the waterfront along the north compose the small valley in which the main town lies. The valley is traversed southeast to northwest by Alhambra Creek. These natural features give Martinez a distinct and legible form. The primary entrances to Martinez are Alhambra Avenue, Pine Street and Pacheco Boulevard from the south, and two scenic waterfront drives, Carquinez Scenic Drive from the west, and Marina Vista from the east.

The entrances are enclosed by hilly topography, barring premature views of the town center, and emphasizing a distinct urban form once the town is visible. The most visually dramatic approach to Martinez is from Carquinez Scenic Drive. The descent from the hills along Carquinez Strait suddenly reveals the town. From Alhambra Avenue, because of the approach through lower elevations, the town is revealed gradually. However, a gateway effect is still strong because of

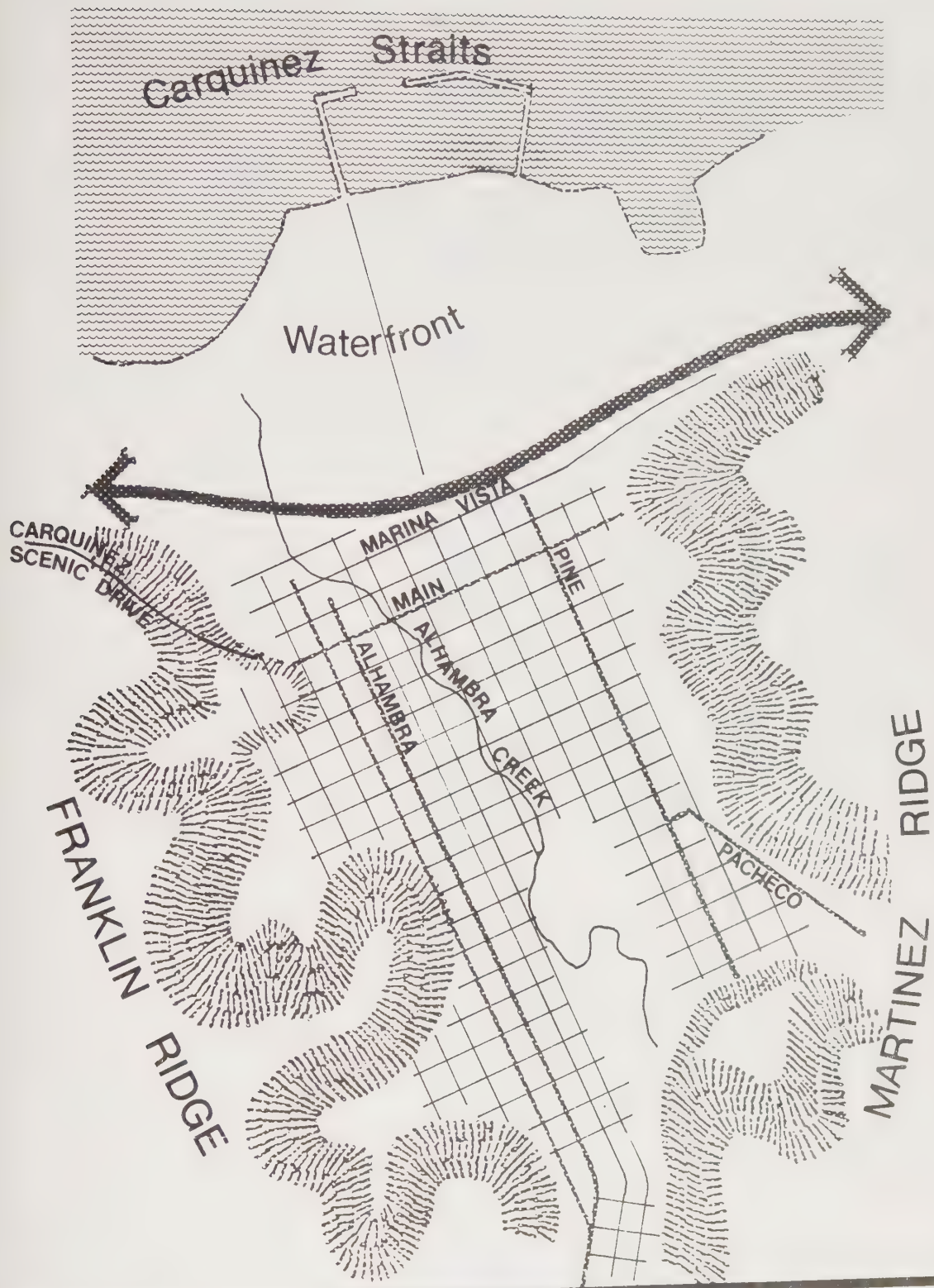


FIGURE 1
Natural Features and Street Pattern

enclosing hills and vegetation. Within the town itself, the road pattern is generally rectilinear, with grid-patterned streets oriented to the waterfront.

The waterfront is a primary natural resource area with marshes and wetlands, and when developed as a city and regional park, will provide an even stronger edge to the town's northern boundary.

Natural features and road patterns which give Martinez its form are mapped in Figure 1.

III. EXISTING URBAN FRAME

Urban frame refers to that part of the physical setting which will be visually affected, either directly or indirectly, by the introduction of a new element, such as the project under consideration. Although the city limits of Martinez are extensive and include areas beyond the Martinez Ridge to the south, that part of Martinez which will be affected visually by the proposed detention facility is mainly the town center, circumscribed by the Franklin Ridge on the west and the Martinez Ridge hill occupied by the Shell Oil refinery storage tanks on the east, Carquinez Strait and the waterfront on the north, and the enclosing Franklin and Martinez ridges to the south.

URBAN TEXTURE

Urban texture is a term descriptive of the visual character of an area. Texture within a city or town represents the composite character of its visual elements. Large or coarse grained texture usually refers to the visual quality within an area composed of a few comparatively large homogeneous or simple elements, such as institutional buildings. Fine-grained texture usually refers to a visual quality in an area which is made up of many intricate and diverse elements of varying size.

The historic growth pattern of Martinez is clearly discernible from its form. The oldest part of the city is centered near the waterfront, in the middle of the valley, recalling the once important role of the port. The downtown business district and the residential areas immediately surrounding it are finely grained, with small

structures (1-2 stories in height) of various styles and ages, facing streets on the northwest-southeast grid pattern. Most of the roadways downtown are 35' wide, although residential streets are often narrower.

The main downtown streets afford open views of the strait; cross streets have the hills as backdrop. Residential areas climb halfway up the hills on each side of the town center, to elevations of 100' on east and to 200' on the west. In the middle of the old town center, the County Civic Center buildings are located on six blocks, with the vertical tower of the county Administration Building a dominant focal point. Further south along the main approach roads, Alhambra Avenue and Pacheco Boulevard, newer residential areas and commercial development present a looser structure, often with curvilinear streets. The town throughout is heavily planted with deciduous shade trees along the streets. Beyond the natural valley of the town center, post-World War II housing developments occur which are within the city limits of Martinez but are visually differentiated from the town proper.

The location of the county seat in the midst of the old town of Martinez superimposes a new pattern upon the old. Massive in scale, urban in appearance, the county buildings present a definite break in the fine grain of the original port town of Martinez. Whereas the visual character of most of Martinez may be described as "townscape", the character of the County Civic Center can be described as "cityscape." The relatively uniform color and texture of building materials (mostly grey concrete and stone) contrast sharply with the varied textures and colors of the downtown buildings, and the diverse cottage and bungalow architecture of the homes. The County Civic Center boundary established in 1963 encompasses 12½ blocks. Although only 6 of those blocks now have buildings constructed specifically as county offices, county parking lots are located on four more, and many of the existing residential buildings are used by the county for office and storage. The expanse of parking lots surrounding the county buildings, albeit with some landscaped planting strips, disrupts the built-up and comparatively dense downtown and residential areas, where small buildings are sited on small lots, and cars are parked on small lots and on the streets. Because of the recurring views of the town from hills and points of higher elevation, the old town with its jumble of pitched and flat roofs and dense vegetation contrasts with the uniformly flat roofs and parking lots of the county complex. The single most imposing building in the

county complex is the Administration Building, 12 stories high, visible from the downtown and points of higher elevation throughout the city. Although in itself an interesting example of a significant period of architecture, the building is a departure from the general texture of the city.

The texture of the city of Martinez, then, is a result of both history and function. The closer, finer texture of the old port city is obvious in its small brick, frame and stucco commercial buildings, often with false fronts, and the Victorians, later bungalows and frame houses of the residential areas. The coarse grain and massive structures of the County Civic Center are differentiated from the city form by the architectural concept of their function. Urban texture is mapped in Figure 2.

SIGNIFICANT FEATURES

Significant visual features within the town are both natural and man-made. Figure 3 locates and identifies the features. The hills, the waterfront, the creek form the natural setting. Because of their large size, the most prominent man-made features are the buildings within the Civic Center complex. The Administration Building, described above, is most visible. The Courthouse, the new George Gordon Education Center, the Health Building, the Finance Building, the main jail, and the post office are all squarish, substantial buildings, three to four stories in height, with the exception of the six-story Education Center and the one-story post office.

These buildings are bordered by the downtown commercial buildings on the west, small homes mixed with office buildings to the south and southwest, the waterfront on the north, and the homes grouped on the hill to the east. Above that group of homes are the storage tanks and stacks of the Shell Oil refinery, the second most significant of the man-made features, highly visible because of their height above the town and the white and pastel colors which are seen clearly at a distance.

The Southern Pacific Railroad fronts the town along Marina Vista Drive, between the town and the waterfront. The railway supports moderate traffic, including AMTRAK passenger trains and freight and switching traffic, and constitutes a significant barrier between the town and waterfront. Some provision for pedestrian traffic between the town and the waterfront may be necessary when the waterfront is developed as a regional park.

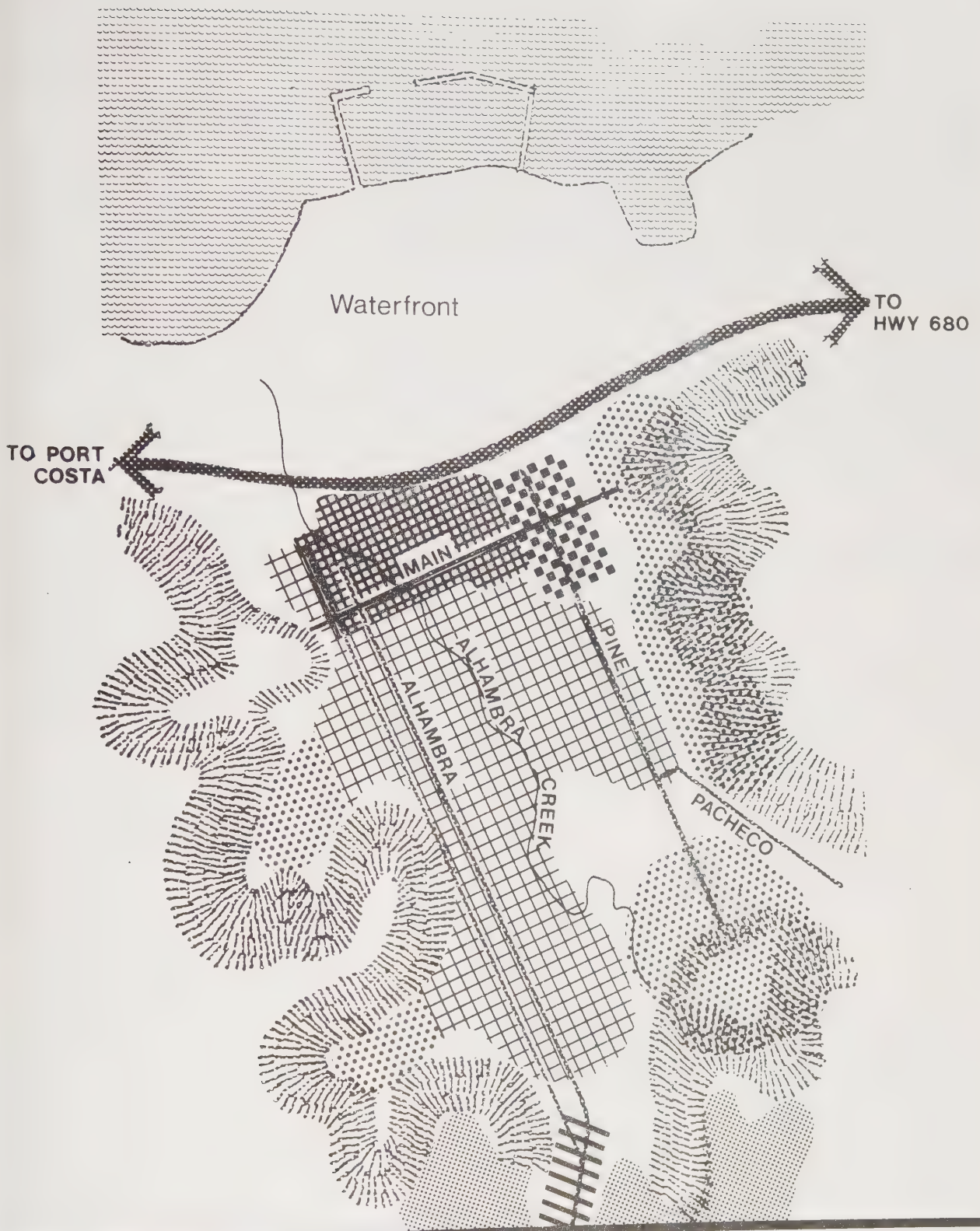


FIGURE 2
Urban Texture

Older Residential

Hillside Residential

Newer Residential



County Civic Center Area



Downtown



Commercial Development

The Martinez Marina, with a restaurant, bar, and facilities for boat docking and storage is located at the end of the waterfront, accessible by an extension of Ferry Street. Both the marina and the existing wetlands marsh area will be preserved as part of the park development of the Martinez waterfront. At the end of the marina a ferry, the Fresno, is anchored. The ferry is a significant feature of the local landscape, and plans are being made to incorporate it into the waterfront development plan as a commercial venture.

Beyond the city center, the town center is not distinguished by individual buildings of large size or imposing character, but rather a small scale mixture of homes and commercial buildings which together form a consistent texture. The break in street pattern created by the creek's irregular course is a significant feature of the urban pattern.

The defunct cannery, if it is converted to warehouses, will remain a significant feature of the waterfront area, due to the large size of the structures.

A local landmark is the Victorian house built in 1880, owned by the junior college district and leased to the City of Martinez, which in turn leases it to the local historical society for the Martinez Historical Society Museum. The house is located in the Civic Center, at the northeast corner of Court and Escobar.

IV. THE SITE

CHARACTER OF THE SITE

The project site is located on 6 blocks within the County Civic Center site boundary. The site location is indicated in Figure 4. The streets bordering the site are Court on the west, Willow on the east, Mellus to the south and Ward to the north. Pine, Thompson and Green streets bisect the site. Two blocks within the site are used exclusively as county parking lots. The post office building is located fronting Court Street on the block between Ward and Green. The half block, bounded by Ward, Willow, and Green streets, is vacant except for three houses, at the Ward and Willow corner. Houses have been cleared from the block bounded by Willow, Pine, Green and Thompson, leaving only two homes on Willow and a one-story office building at the corner of Thompson and Pine. The rest of the block is being

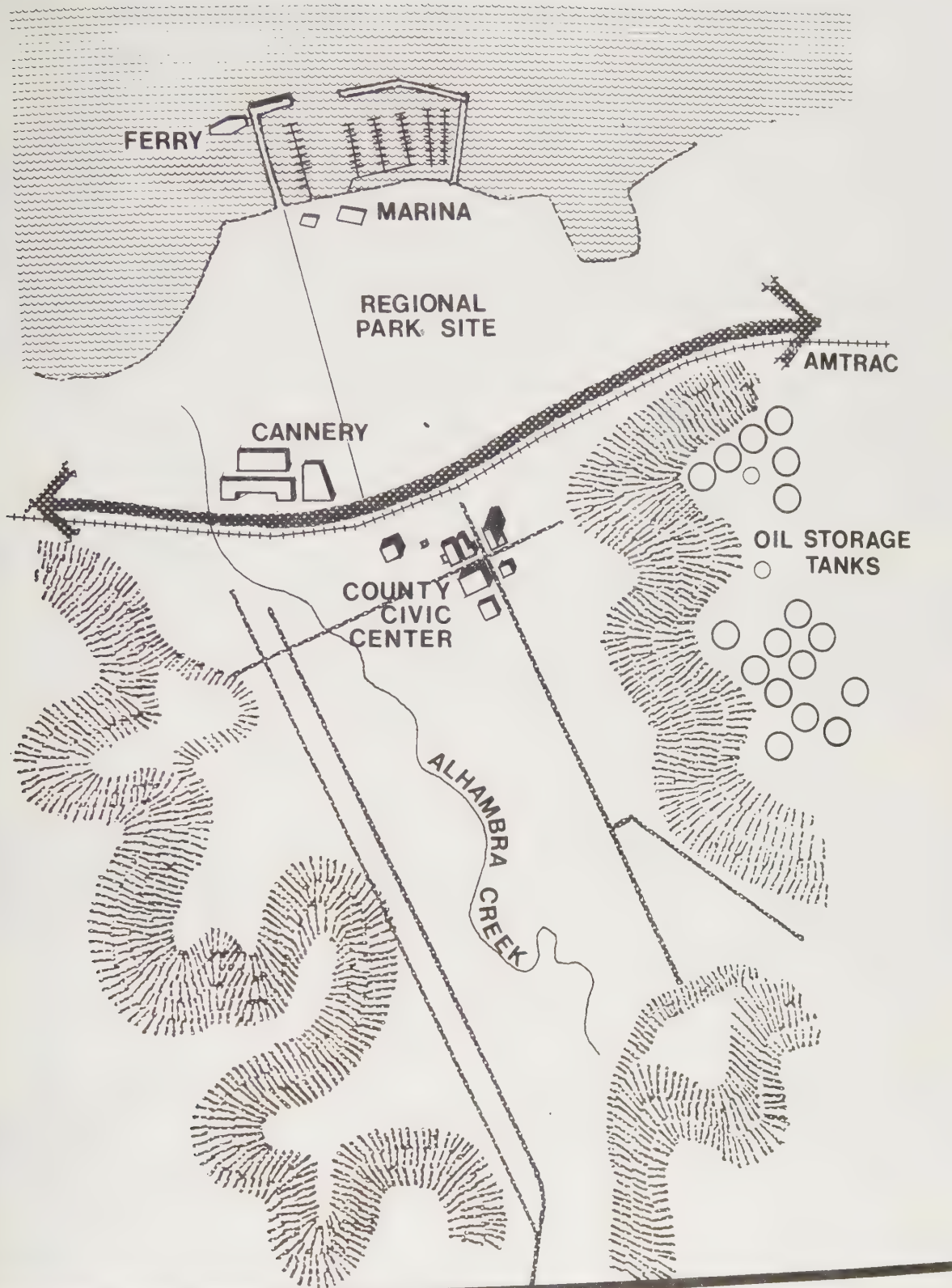


FIGURE 3
Significant Features



FIGURE 5-A. Northwest



FIGURE 5-B. West



FIGURE 5-C. Southeast



FIGURE 5-D. East

graded, and used for car parking. The southeastern-most block is primarily in residential use, although some of the buildings are used as offices. On the block bounded by Pine, Court, Mellus and Thompson, the southwesternmost block, a single one-story office building remains at the corner of Thompson and Pine.

The 6 blocks are on relatively level land, for the most part between 18' and 25' elevation, sloping upward on the east side to approximately 50' at Willow Street.

The site has no remarkable visual features at the present time. However, the two southern blocks are consistent with the texture and pattern of the town of Martinez, and several of the houses are characteristic of the older architecture of Martinez. Surrounded by dense planting and street trees, these blocks provide visual amenities typical of the city.

The blocks with developed parking lots are encircled by planting strips and street trees. The post office is set apart by palm trees, highly reflective white paint, and its late thirties architecture. Figure 5 maps on-site features and views from the site.

VIEWS FROM THE SITE

The views from the site are of the east hillside residential area, with its hillside homes partially obscured by dense vegetation, the Shell Oil refinery tanks above the hillside, the southern residential-office building area, only the periphery of which is visible from ground level on the site, the county buildings and Administration Building tower on the north which block views to the waterfront, and the periphery of the downtown business district.

Views from ground level are characterized by enclosure by vegetation, structures or topography on all sides, especially on the east and north, and the lack of distant views. View corridors exist only at the intersection of Pine Street and Green Street, and along Pine Street with views towards the waterfront.

The accompanying photographs are keyed to Figure 5, and are identified by direction of view.

VIEWS FROM THE SITE

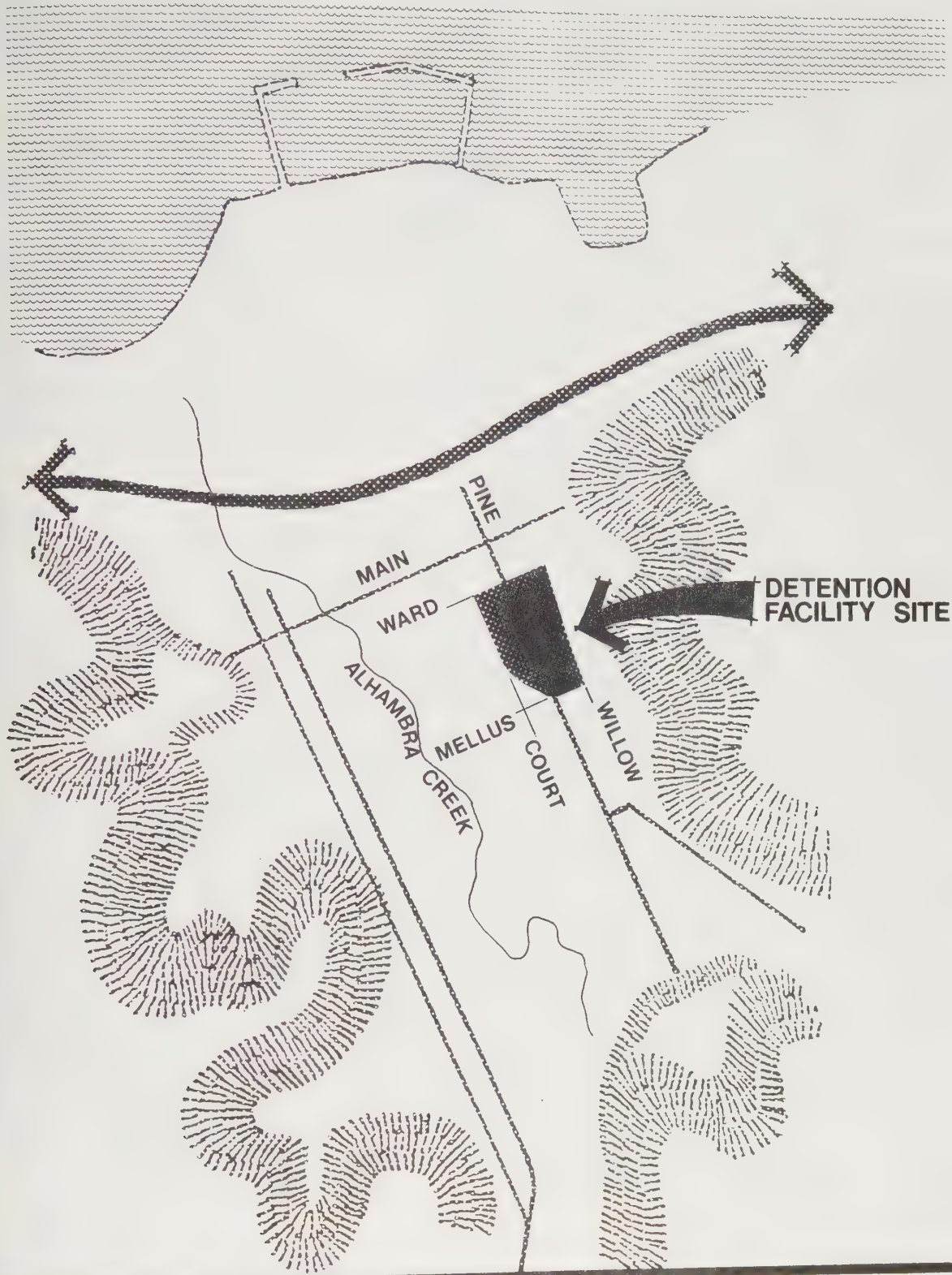





FIGURE 4
Site Location



FIGURE 5
Site Features and Views

- CIVIC CENTER BOUNDARY - 1963
- - - DETENTION FACILITY SITE
-  SIGNIFICANT COUNTY BUILDINGS
-  MIXED USE AREA
-  VIEWS FROM SITE

IV. RELATIONSHIP OF THE SITE TO ITS SURROUNDINGS

The visual relationship of the site to its surroundings is delineated by a mapping of the viewshed, views from approaches to the site, and viewpoints within the town. The following sections describe these three visual factors and their components, and assess their vulnerability to visual impacts.

The visual impact of the site on surrounding areas depends on proximity of the area to the site, height of the viewer, the number and role of potential viewers, and the extent to which the view may be obscured by vegetation, structures or topography. Vulnerability to visual impact can be assessed based on the degree and frequency of visibility of a site or view area. The role of the viewer plays an important part in assessment of impact. For instance, residents who are not home during the day may experience less visual impact than county workers for whom the site is a constant prospect. Shoppers would not be affected by night lights as residents would.

For the purposes of the following discussion, the number of viewers within each viewshed area is roughly calculated, based on number and type of dwelling units or offices, and traffic counts which provide some indication of the number of shoppers and visitors traveling in and through an area each day. (Some overlaps occur between the categories, since some motorists may be also residents or workers, and some residents may be workers, and vice versa.)

The 1975 Special Census delineated Block Group I, census tract 3170, which approximates the East Hillside area and the South area of the viewshed. The resident population of this block group was 1005 persons. Block Group I of census tract 3160, which approximates the Downtown and County areas of the viewshed, had a population of only 296 (152 of whom were inmates of the detention facility). The Contra Costa County's Land Use and Transportation Study provides data on the number of businesses and employees in the area for 1970. In an area closely approximating the two block groups above, the study found that there were 3,400 employees (including approximately 1700 governmental) and 337 retail, other business and industrial establishments.

Summer views of the site are noticeably reduced by foliage. Analysis of existing visual conditions was done before most of the deciduous trees lost their leaves.

Consequently, from some views, the site will be more revealed as winter approaches. Especially vulnerable to this change will be the Pine Street approach and views from homes on the east hillside.

Figure 6 maps major vegetation existing on the proposed site, which consists primarily of perimeter plantings of deciduous shade trees and low evergreen shrubs around the county parking lots. Occasional specimen plants, such as the Port Orford and Deodar cedars, emphatic plants, such as the Canary Island date palm, *Dracaena* palms, and Italian cypress in the post office block, broad-leaved evergreens and miscellaneous homeowner plantings, such as fruit trees, ornamentals and shrubs comprise the balance.

Surrounding residential areas are heavily planted with a mixture of street landscaping and homeowner plantings. Plants of particular value are the sycamores lining Pine Street as it approaches the site from the south. These trees provide an effective screen throughout most of the year, and their removal should be avoided. Mature homeowner landscaping in surrounding areas provides visual screening of the site especially during summer months, and considerably reduces visibility of the site from the residential areas. The downtown areas, including the Green Street approach to the site, do not have major street tree plantings. County landscaped areas generally consist of perimeter plantings of deciduous trees, low shrubs and ground covers around parking lots.

VIEWSHED

The viewshed, that area from which the site is constantly or intermittently visible, includes the residential hill area to the east of the site, the Civic Center, and an irregular portion of the downtown and residential areas to the west and south. The viewshed is delineated in Figure 7. The site is either not visible from areas outside of the viewshed, or so infrequently or remotely visible, that those areas are not included in the viewshed. From some localized areas within the viewshed, the site is not visible, and from some it is only partially visible. For example, from the second stories of some homes on the east hill, portions of the site may be visible, but from ground level, vegetation or houses obscure the view.

The four areas within the viewshed are the East Hillside, the South, Downtown, and the County area. East Hillside includes areas on the hill east of the site which have constant or seasonal views of the site. The South area is



FIGURE 6

Major Site Vegetation

DECIDUOUS SHADE TREE

BROADLEAVED EVERGREEN

EMPHATIC OR SPECIMEN VEGETATION

OTHER (LARGE SHRUBS, FRUIT TREES, ETC.)

EXISTING STRUCTURE

DETENTION FACILITY SITE BOUNDARY



FIGURE 7
Viewshed

--- DETENTION FACILITY SITE

→ VIEWS

① HIGH VULNERABILITY

② MODERATE VULNERABILITY

③ LOW VULNERABILITY

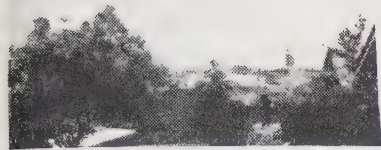


FIGURE 7-A



FIGURE 7-B



FIGURE 8-C



FIGURE 8-D

VIEWSHED

composed of residences and some office space, and is contiguous with the site on one boundary, and follows Alhambra Creek on the other. The Downtown includes only that portion of the central business district which has views of the site. The County area includes county buildings which have views of the site from ground level and/or upper stories. The viewshed areas are also delineated on Figure 7.

The visual impact of the site on the four areas is ranked according to the degree and frequency of visibility. Vulnerability to visual impact is characterized as high, moderate and low, and is indicated for each area in Figure 7. Photographs of characteristic views accompany each area description, and are keyed to Figure 7. Photographs are identified by figure number and key letter.

All four areas have approximately the same high degree of vulnerability from the site periphery, that is, from the edge of the area which is contiguous with the site. Here visibility is unobstructed and constant from almost all areas. When remaining existing residential and office structures are removed as planned from the county site, viewshed areas will be uniformly exposed.

East Hillside. The site is most visible from the East Hillside area because of the rising elevations. Although views of the site are generally restricted from streets, which are often lined with trees, homeowner plantings, and two-story homes, views from second stories and sometimes ground level of the homes often include a major portion of the site. Resident population of the East Hillside area is estimated at 230.

County. The County area includes the 12-story Administration Building which has a restricted view of the site due to lack of windows on the south side, the northwing of the Administration Building with partial views from the fourth and fifth floors, three- and four-story county offices and the Courthouse from which the site is partially visible. Views from most of the county buildings are limited by siting or absence of windows. County office employees total 1700. Pedestrians within the County area who would be affected by site views for short periods of time reach a maximum of 185 at Pine and Main at noontime (January, 1977 traffic data).

Downtown. The Downtown area has a limited area from which the site is visible, but also has the largest number of viewers, thereby increasing frequency of visibility. Beyond Ferry Street, the site is obscured by buildings.



FIGURE 7-E



FIGURE 7-H



FIGURE 7-F



FIGURE 7-I



FIGURE 7-G



FIGURE 7-J

VIEWSHED



FIGURE 7-K



FIGURE 7-L



FIGURE 7-M



FIGURE 7-N



FIGURE 7-O

VIEWSHED

The Downtown resident population was estimated by the 1975 special census at 144, excluding detention facility inmates. Traffic counts indicate that traffic on typical downtown streets within the viewshed averages about 1900 ADT, although Pine Street, which is a major entrance to the Civic Center, totalled 4300 average daily in-coming vehicles for January, 1977. Number of motorists, based on an average car occupancy of 1.5 persons per vehicle, would approximate 3000 for downtown streets, and 6450 for Pine Street.

South. From the South area, views of the site are most restricted, except, as mentioned above, for those homes and offices bordering the site. The level topography, dense vegetation and low resident density make this area the least affected visually by views of the site. Approximate resident population is 120, and office population is approximately 50.

VIEWPOINTS

Because of the hilly terrain of Martinez, some residential areas are located on knolls or hillsides outside the viewshed boundary, yet at elevations which offer constant though distant views of the site. Those homes sited on the north and east slopes of these hills, with views unobstructed by vegetation or structures, will have visual access to the site. Because of the distance and consequently the relatively small visual impact of the site, the daytime views from these areas are not considered to be a visual resource which is subject to damaging alteration. However, the prospect from these hills at night may be severely altered if high-intensity lighting is required for the detention facility and parking lots. This probability will be more fully discussed under assessment of impact.

Three viewpoints were chosen as representative of viewpoints outside the viewshed. All three are approximately ½ mile from the site. They are: 1) views from Valente Circle in a residential area located southeast of the site and the closest hillside residential area outside the viewshed; 2) Harbor View Drive, from which views are limited by vegetation and terrain to only a handful of houses; and 3) the view from Escobar and Bayview streets, characteristic of views from the west hillside residential areas. The views from this hill are often obscured by vegetation and structures; however, some houses and streets will have clear views of the site, especially in winter, and at night if high-intensity

lighting is installed. The three viewpoints are mapped in Figure 8. Photographs of views from these viewpoints are keyed to Figure 8.

VIEWS FROM APPROACHING ROUTES

Approaching routes with views of the site are mapped in Figure 9. Photographs of sequential views along the approach are keyed to Figure 9. The street approaches of greatest visual impact in terms of the number of viewers will be the Pine Street and Green Street approaches to the site. Because the site is now mostly vacant, the Pine Street view terminates at the Administration Building, and the Green Street view terminates at the site, with the east hillside as a backdrop.

Counts of average daily traffic on Green Street at Las Juntas for January, 1977, totalled 2761 vehicles. Average daily traffic counts for Pine Street at Thompson Street totalled 7,900 vehicles for January, 1977.

The Pine Street approach will vary in impact according to the season. In winter, views begin at the Brown Street intersection. In summer, the site is fairly well obscured until the Pine and Jones streets' intersection. The Green Street approach is fairly constant throughout the year, because its limits are structures rather than vegetation. The single-story buildings which line the street frame the backdrop view of the hill and oil tanks.

The key factors for each approach are the terminal views. For Green Street, the east hillside backdrop, and for Pine Street, the Administration Building tower, will be significantly altered by construction of the detention facility. Because Pine Street is also a main entrance to the Civic Center, particular attention should be given to the visual impact from this approach.

A third approach along Court Street skirts the site along its western boundary. (Traffic counts on Court at Thompson averaged 400 ADT for January, 1977.) The site will be clearly visible from the intersection of Mellus and Court to the intersection of Green and Court streets. The presence of a massive structure could effectively block views of the east hill, and dramatically change the character of the view, funneling the view of motorists traveling in a northern direction towards county buildings.

The fourth, less frequently used approach is Carquinez Scenic Drive, a designated scenic highway, which enters from the west and offers dramatic views of the city.

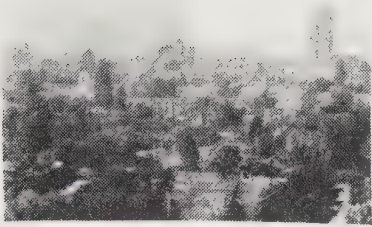


FIGURE 8-A



FIGURE 8-B



FIGURE 8-C

VIEWPOINTS

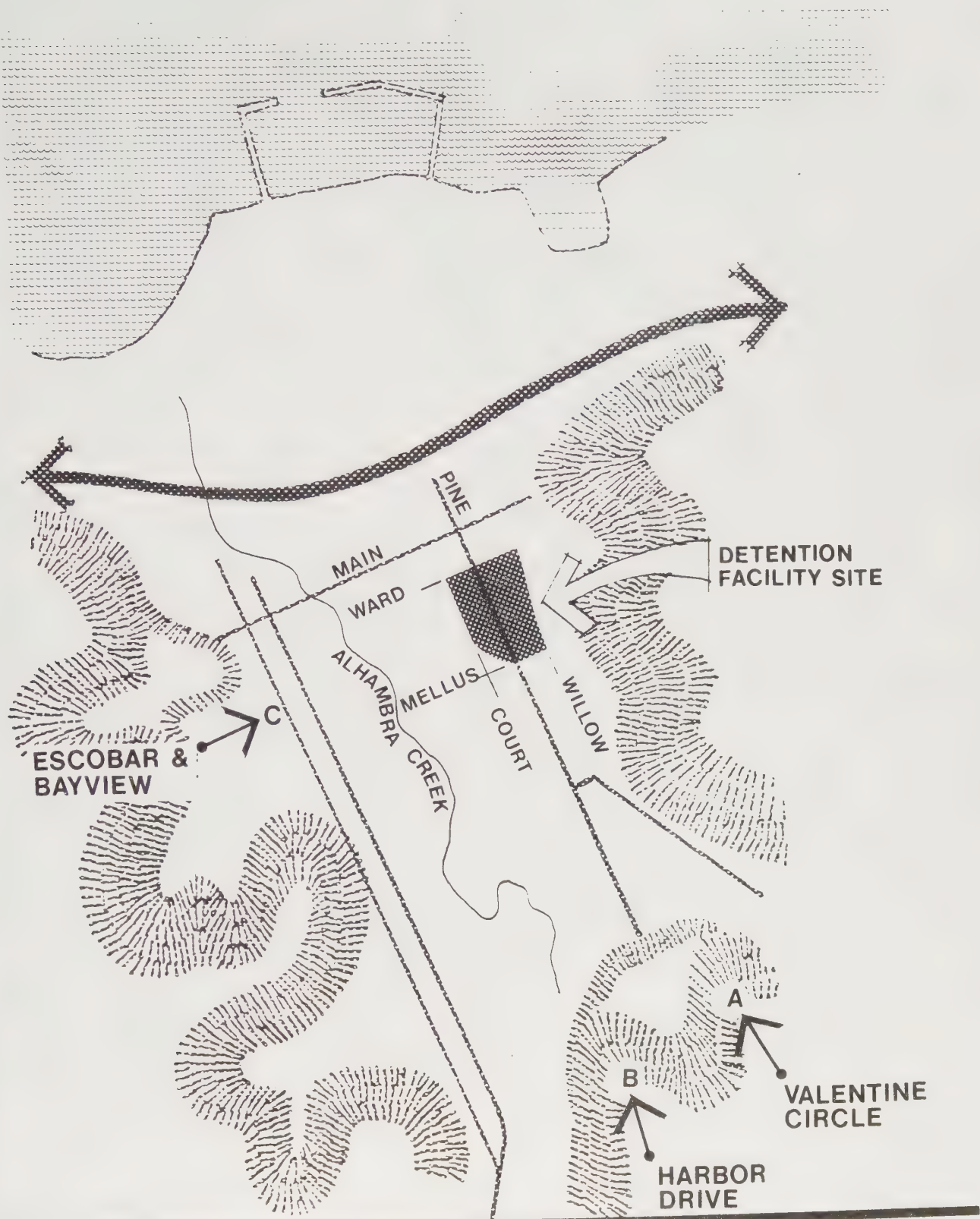





FIGURE 8
Viewpoints



FIGURE 9
Views From Approaching Routes

-  VIEWS FROM APPROACHING ROUTES
-  CIVIC CENTER BOUNDARY - 1963
-  DETENTION FACILITY SITE

Because of the distance from the site, the daytime view of the present site is relatively insignificant. This view could be significantly altered either by massive structures or night lighting. The most recent available traffic counts for this road show 820 average daily trips for the date 10/24/68. It is likely that traffic has increased on this road, but not to the degree that the route would be considered a major thoroughfare.



FIGURE 9-A

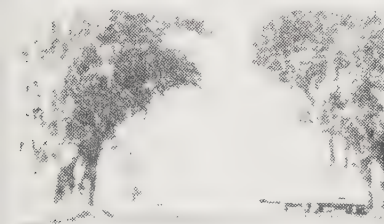


FIGURE 9-B

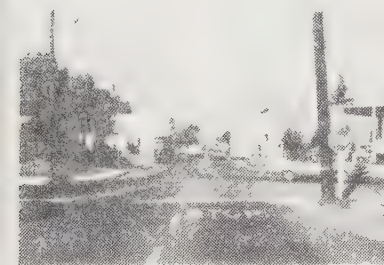


FIGURE 9-C



FIGURE 9-D

VIEWS FROM APPROACHING ROUTES



FIGURE 9-E



FIGURE 9-H



FIGURE 9-F



FIGURE 9-I



FIGURE 9-G



FIGURE 9-J

VIEWS FROM APPROACHING ROUTES

PART II: ASSESSMENT OF VISUAL EFFECTS OF THE PROPOSED DETENTION FACILITY DESIGN

CONTENTS

I. INTRODUCTION

II. DESCRIPTION OF THE PROPOSED PROJECT

- Facility Configuration and Site Plan
- External Characteristics of the Proposed Structure

III. EFFECT OF THE PROPOSED FACILITY ON EXISTING CONDITIONS

- Effect on the Physical Setting
- Effect on Urban Texture
- Effect on Significant Features
- Effect on the Site
- Effect on Viewshed Areas
- Effect on Viewpoints from Surrounding Areas
- Effect on Views from Approaching Routes

LIST OF FIGURES

- FIGURE 10. Site Plan
- FIGURE 11. View from East Hillside
- FIGURE 12. View from Court and Main Streets
- FIGURE 13. View from Green and Las Juntas Streets
- FIGURE 14. View from Court and Henrietta Streets
- FIGURE 15. View from Pine and Mellus Streets

PART II. ASSESSMENT OF VISUAL EFFECTS OF THE PROPOSED DETENTION FACILITY DESIGN

I. INTRODUCTION

The proposed detention facility will be assessed for its visual effect on existing conditions documented in the first part of this chapter. Two aspects of the proposed facility will be addressed:

- 1) facility configuration, including site planning, orientation, and parking provisions, and
- 2) external characteristics of the proposed building, including architectural factors such as form, height, bulk, color, texture, and shadow. Both aspects will be first generally described. Effect on existing conditions will be then described in the same order in which existing conditions were described in Part I.

Visual effects or impacts which will result from the project are fully discussed, but are not described as adverse or beneficial, due to the subjective nature of such evaluations. The terms "impact" and "effect" imply change but not necessarily negative change.

Assessment is based on present proposals for siting and design of the project. When changes in existing proposals are probable, underlying general concepts are responded to. The site plan as proposed accommodates parking for 450 cars; if parking requirements are determined to exceed this number, changes in the present site plan will occur. This assessment responds to the present site plan, but also considers the effects of increased parking provision.

II. DESCRIPTION OF PROPOSED PROJECT

FACILITY CONFIGURATION AND SITE PLAN

The proposed facility site encompasses 7.8 acres in the center of the City of Martinez, within the Civic Center boundaries. The detention facility plan includes the proposed structure, consisting of a detention facility and a court annex housing two courts, plus parking, circulation

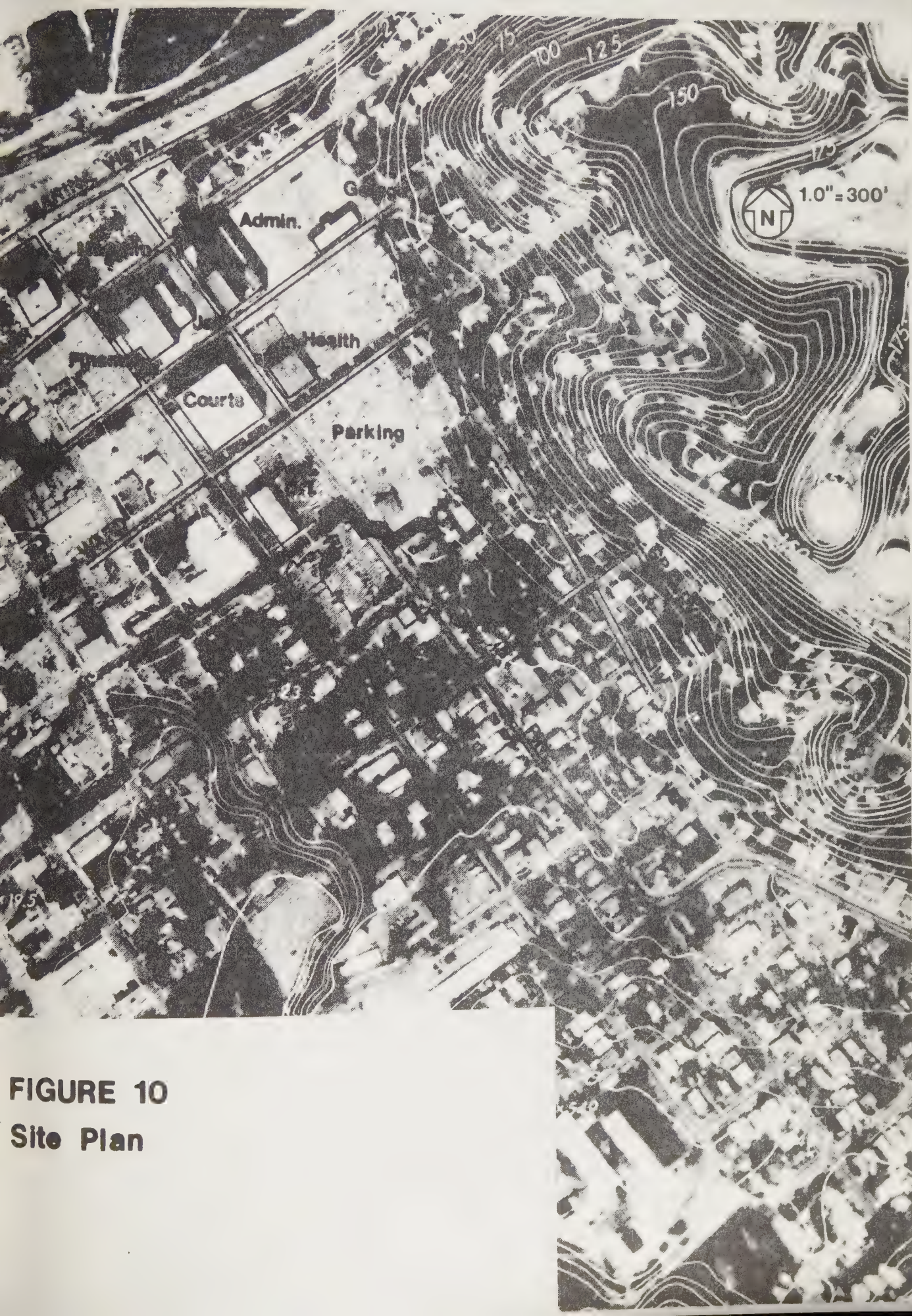


FIGURE 10
Site Plan

and landscaping provisions. The entire site will occupy six blocks. The detention facility structure and connected court annex will occupy approximately 15% of the total site area.

The post office will remain in its present location on site. All other existing structures will be removed from the six block area, with the exception of a single house on the corner of Willow Street and Green Street, now being used for county offices, which may remain, depending upon the final determination of parking needs. The present site plan with 450 parking spaces provides for retention of the house. The majority of the space not being used for the proposed structure itself is scheduled for parking area.

The facility as designed will require closure and diversion of Pine Street between Ward Street and Mellus Street. Pine Street will divert to Court Street at the south site boundary.

Other street closures will be Thompson Street between Willow Street and Court Street, Green Street between Willow Street and Court, and Willow Street between Green and Ward. Willow Street will either be reconstructed to a cul-de-sac in the vicinity of Green Street, or extended from Green Street to Ward Street. Thompson Street will be reconstructed to a cul-de-sac. See Figure 10 for site plan and street alterations.

Facility siting will place the major structure across the existing paths of Pine Street and Green Street. Parking areas are located to the east and northeast of the main building. Orientation of the main building is inward, away from surrounding neighborhoods and streets. The main entrance is on the northeast side of the building, adjacent to the parking area.

Because the site is relatively flat, grading for the project will not result in major changes in existing landform, with the exception of possible landscape perimeter berming.

The parking area will rise eastward with slopes of approximately 10%, until existing grade of 46' at Willow Street is met. Parking will be located on both terraces and contoured slopes. Floor elevation of the main facility is at 22'.

Provisions for landscaping occur on the perimeter of the site, within the parking areas, and adjacent to the proposed building. The largest provision is on the southwest side of the building, along the Pine Street diversion, with planting widths ranging from 40' to 120'. A second area of considerable size is that on the Willow Street boundary of

the site, with widths from 50' to 80' and a length of 270'. Both areas will serve as visual buffers between existing neighborhoods and the detention facility. Landscape plans are not completed at this time. Increased parking area provisions will result in a reduction of planting area along Willow Street and removal of the residential building at the corner of Willow and Green streets.

EXTERNAL CHARACTERISTICS OF THE PROPOSED STRUCTURE

The central structure will be a four-story modular building, approximately 180,000 square feet in area, a reinforced concrete superstructure with exterior precast elements for the most part, with some poured-in place concrete. Facility design was strongly influenced by the primary objective of creating a building which was non-institutional in character. The modular, decentralized structure of the building will present an external appearance which, though massive, is not institutional. Building design avoids a facade of regular blank surfaces, and provides instead a cluster of rectangular forms, with varying light and shadow, receding and emerging surfaces. The effect of the varied surfaces is to reduce the large scale of the building, and to break up the uniformity created by unbroken concrete surfacing.

The main building is composed of six modules with nine housing units clustered around a large central open space to develop an internal orientation. The building is four stories high with two full floors and two half floors, referred to as levels 1, 1A, 2, and 2A. Building height is approximately 38'. Variations in height result from the mechanical housing units located on top of each module, each 9' in height, and from the two and three story court annex, 22'-28' in height. Rooms are located around the periphery of each module, with common dayrooms in the center of the modules. Outside courts are located adjacent to each module, but are fully enclosed by concrete walls and invisible from the building exterior. Building color as proposed will be a uniform grey concrete.

Texture is provided on the grey concrete wall surfaces by room windows, which vary in number and elevation, although all windows will be the same dimensions. Two alternatives are being considered for fenestration. The first proposes recessed windows, 4' in height and 18" in width. The vertical window openings would be 2' by 8', at 4' and 10' intervals. The second alternative proposes windows 3'6" in height and 24" wide, with 8' vertical louvres projecting 2'6" on both sides of the windows. Both alternatives emphasize the vertical dimensions of the building.

Textural treatment of the exterior concrete walls is a possibility for final finish design.

Reflections and glare from the building will be minimal, since window area is limited and concrete is a nonreflective surface. The building will cast deepest shadows on the areas to the north and east, toward Court Street and Ward Street, and on the area of the parking lot adjacent to the court annex and main entrance to the facility. Shadow patterns will not be extensive enough to encroach on surrounding buildings but will be limited to the site area.

III. EFFECT OF THE PROPOSED FACILITY ON EXISTING CON- DITIONS

EFFECT ON PHYSICAL SETTING

1. The primary effect of the project on the physical setting will be a limited rerouting of the grid-patterned streets in the downtown. This break in the uniform city block pattern will be especially notable since one of the main entrances to the Civic Center, Pine Street, will be diverted. Whereas now Pine Street affords a direct path to the Civic Center, the new building will block views toward the center and Carquinez Strait, and of the east hillside area. The present immediately apprehendable urban form of the town will be partially obscured. No natural features will be altered by the project.

The waterfront, which is being developed as a regional park, will not be affected by the project, since the site is not visible from the waterfront, nor is the waterfront visible from on-site.

EFFECT ON URBAN TEXTURE

The detention facility project will be similar to existing County buildings in its massive scale, grey color and uniform texture, and will be in keeping with the "cityscape" character of the Civic Center, as contrasted with the "townscape" character of the older part of Martinez. By replacing one full block of existing one- and two-story frame and stucco residential buildings plus three other buildings on adjoining blocks within the site, the project will extend the "cityscape" character of the County buildings further into the more finely-grained visual texture of the old town of Martinez. The County Civic Center

boundary will become more clearly delineated, since the project boundaries coincide with the Civic Center boundary, and the nature of the project requires both physical and visual buffering of the project to prevent intrusion into surrounding areas.

EFFECT ON SIGNIFICANT FEATURES

No significant features will be removed from the project site or from the surroundings. However, some significant features will be obscured from views at specific locations. The East Hillside will be blocked from view along Pine Street from Mellus to Ward, and partially blocked along the Green Street approach. Only the upper stories of the Administration Building tower will be visible from areas south of the project; other Civic Center buildings will be observed from areas south of the project.

EFFECT ON THE SITE

The project's major visual impact on the site will be removal of the existing residential and office structures on the block bounded by Mellus, Willow, Pine and Thompson, one residential structure and one office building on the block bounded by Willow, Pine, Green, and Thompson; and the office building at the southwest corner of Thompson and Pine. A second house at the corner of Willow and Green streets will remain if parking for 450 cars is adequate.

The site, now of mediocre appearance, is a mixed use area with parking lots which visually merges with the surrounding neighborhood and downtown. The project will visually transform the site to an area of high visual organization with definite boundaries. The character of that portion of the site which is now residential will be permanently altered.

On-site vegetation, which now consists of a mixture of miscellaneous homeowner landscaping and perimeter plantings of deciduous shade trees and low evergreen shrubs, will be removed, and replaced by landscaped areas enclosing the parking area and buffering the building along the Pine Street diversion and along Willow Street. A number of specimen plants, such as the Canary Island Pine in the parking area behind the post office, may be retained if the parking areas are designed to preserve existing valuable vegetation.

Views from ground level within the site toward the south and the downtown will be blocked by the presence of the

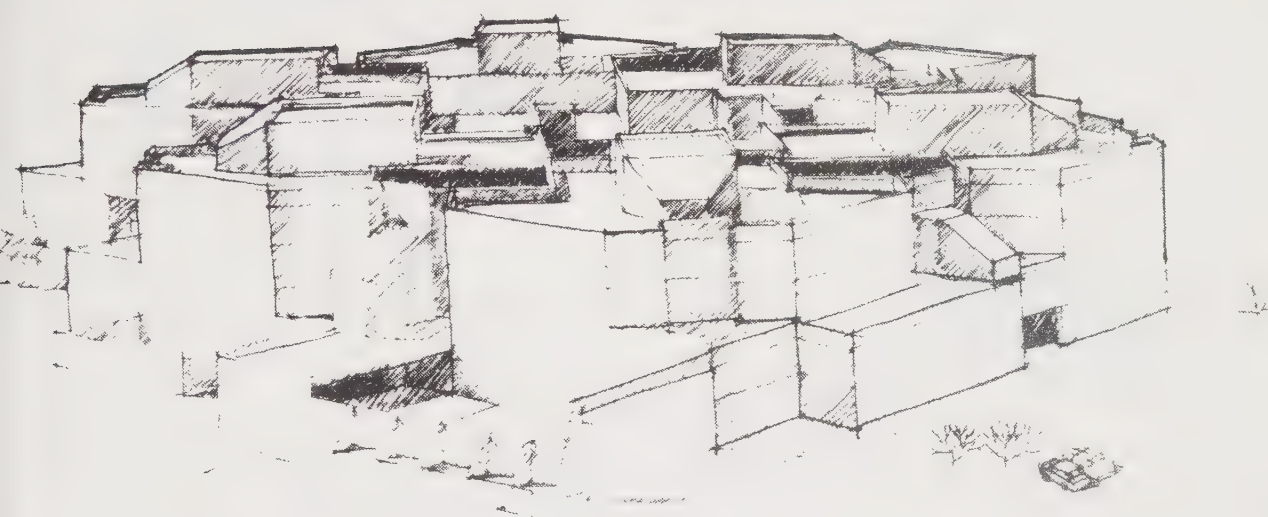


FIGURE 11

View from East Hillside



FIGURE 12

View from Court & Main Streets



FIGURE 13

View from Green & Las Juntas Streets

four-story building. Views of the East Hillside residential neighborhood will be more exposed due to removal of existing buildings along Willow Street. Views toward the north and the rest of the Civic Center site will remain essentially unchanged. Views of surrounding areas will be more exposed from within the upper floors of the detention facility. Existing view corridors from within the site will be blocked.

EFFECT ON VIEWSHED AREAS

All viewshed areas will experience a high degree of visual impact from the site periphery, that is, from the edge of the area which is contiguous with the site. The following descriptions are of the visual impacts on the viewshed areas as a whole.

East Hillside. This area has a high degree of vulnerability due to its elevations above the site and the orientation of most residences facing the site. Willow Street residences will experience the greatest uniform impact as a result of removal of existing structures along the site edge of Willow Street. Views from other residences, especially from second stories, and at some locations from ground level, will be exposed to the site parking areas and the proposed building. The northeast face of the building and the roof will be visible. Figure 11 projects graphically the view of the detention facility visible from the east hillside residential area with no foreground vegetation or structures to obscure the view. The illustration typifies views of the building from second stories of residential structures in the East Hillside area. The presence of the building will constitute the major change, since views from the East Hillside now include parking lots.

County. The County viewshed area has the largest number of potential viewers, but a low vulnerability because of infrequent opportunities for viewing the site, limited for the most part to noontime pedestrians and views from office windows, very few of which face the site. Views of the project will be of the north face of the building, the court annex and parking areas. From the Administration Building, south-facing windows will have a full view of the entire project. However, these windows are located so as to be generally inaccessible. Figure 12 projects views from the County viewshed southeastward toward the site from the corner of Pine Street and Main Street.

Downtown. The major impact on the Downtown viewshed will be experienced by motorists traveling north-south on Pine Street, and on streets entering Pine Street from the

downtown. The building will partially block views across town to the East Hillside, and will form a visual barrier between the two parts of the town. The visual boundary between the Downtown and the County will be more clearly defined, whereas now the Downtown and the County areas merge visually and Pine Street does not function as a distinct boundary. The presence of the proposed structure, similar in scale and mass to the other County buildings, will emphasize the contrast with the small scale, varied buildings of the Downtown. Figure 13 projects the proposed court annex structure across the Green Street approach from Downtown.

South. From this viewshed area, the building will function as a visual background whereas now no background exists because of the level topography and dense homeowner landscaping. The character of the neighborhood will change with the presence of a massive building, much as if a wall were erected between this area and the center of Martinez. Because of the area's low inherent vulnerability as a result of the low population and restricted views, even though the building will create a change in character, the visual impacts are moderate. Figure 14 depicts the projected change in character.

EFFECT ON VIEWPOINTS FROM SURROUNDING AREAS

Impact on viewpoints from residential areas outside the viewshed boundaries are considered to be insignificant, unless night lighting is intense enough to be a visual nuisance, or to alter the character of night views from these areas. If the parking areas and the proposed structure are brightly lit for security purposes, the six-block site could have an adverse impact on viewpoints outside the viewshed areas. Recommendations for lighting are made in the following section, MITIGATION MEASURES.

EFFECT ON VIEWS FROM APPROACHING ROUTES

The Pine Street approach to the site will receive the greatest impact from the project. Pine Street now serves as a main approach to the Civic Center, and provides a sequential effect by approaching the terminus of the Administration Building and the Civic Center in a straight line. The proposed Pine Street diversion will alter this approach. A view of the south wall of the four-story detention facility will replace the present long-distance view of the City Center, and will disrupt the sequential effect of the approach. Figure 15 indicates the project view from the corner of Pine Street and Mellus, just before the street is diverted to the left.



FIGURE 14

View from Court & Henrietta Streets

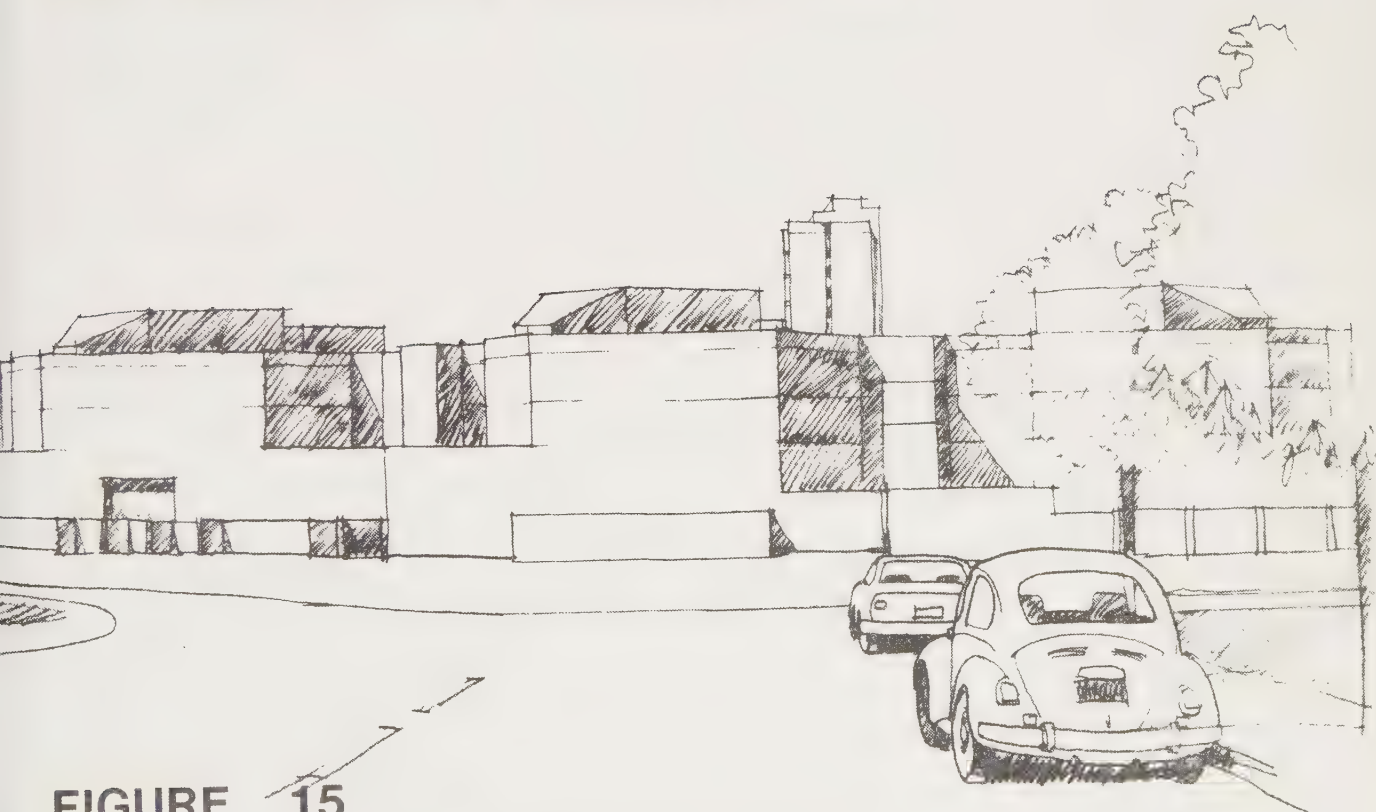


FIGURE 15

View from Pine & Mellus Streets

The Green Street approach to the site will terminate at the court annex. The East Hillside will be only partially visible above it; the oil storage tanks, however, will be clearly visible. The project will serve as a visual barrier to views which now link the Downtown, East Hillside and Civic Center areas. The court annex will become the terminal focus for the Green Street approach. Figure 13 projects the proposed court annex as it will appear from the Green Street approach.

The Court Street approach will be significantly altered. Traffic which now enters via Pine Street will be directed to Court Street. Views on Court Street from Mellus Street to Green Street in an east-northeastward direction will be entirely blocked by the detention facility. Views will be channeled northward the length of Court Street, emphasizing the division between the Civic Center site and the downtown, and will form a new visual sequence.

No significant impact is expected to occur on Carquinez Scenic Drive unless high intensity night lighting is used on site. Recommendations for lighting are made in the following section, MITIGATION MEASURES.

PART III: MITIGATION MEASURES

CONTENTS

- I. SITE PLANNING
- II. EXTERNAL FACILITY DESIGN

PART III: MITIGATION MEASURES

Visual effects of the proposed project which appear to be primarily adverse and for which reasonable mitigation measures may be taken are considered in the following discussion. Measures which would emphasize any positive potential effects are also given. Some visual effects of the project cannot be mitigated without a major redefinition of the project program, and mitigation measures for these effects are not included within the discussion. Present site and facility plans do not address landscaping. Recommendations concerning landscaping are guidelines, rather than responses to specific proposals.

Mitigation measures are grouped under two headings, site planning and external facility design. Recommendations are made for revisions or changes in the proposed project. Following each recommendation, the intent of the recommendation is defined, and in most cases, specific provisions are indicated.

I. SITE PLANNING

1. RECOMMENDATION: Limit on-site parking to a maximum of 450 cars unless parking structures are provided.

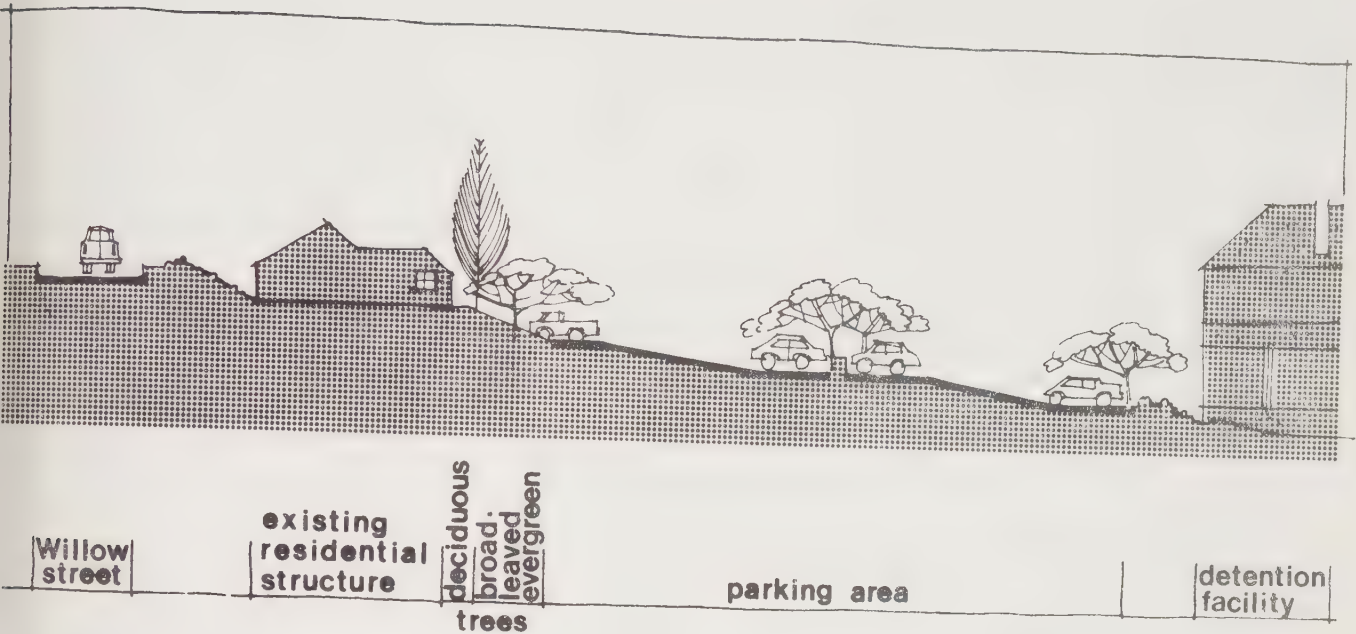
INTENT: To reduce the visual impact of a large expanse of paved parking surface and glare from cars, and to allow sufficient land for landscaping.

SPECIFIC PROVISIONS: Area retrieved from parking can provide an effective visual and physical buffer zone around the facility. The buffer zone ideally should function as an integrated activity area used by residents and workers from the Civic Center and downtown, rather than as a barrier between the project site and its surroundings. Small parks, landscaped areas, and pedestrian ways, in areas of the site adjacent to the county and downtown, and retention of existing structures along the Willow Street boundary would be a desirable alternative to parking lots.

2. RECOMMENDATION: Consider retaining existing structures and homeowner landscaping along Willow Street site boundary between Ward and Mellus Streets and supplement with landscaping to screen views of facility and parking areas.

INTENT: To provide a visual and physical buffer for residences in the East Hillside viewshed area, and to retain "townscape" character of the surrounding area. (See accompanying sketch.)

SPECIFIC PROVISIONS: Especially important is retention of the residential structure now used as a county office at the corner of Green and Willow Street. This house has architectural qualities worth preserving, and effectively functions as a partial buffer for the East Hillside viewshed.



VISUAL BUFFER ON WILLOW STREET BOUNDARY

3. **RECOMMENDATION:** If Recommendation #1 is not possible, retain at a minimum existing provisions for landscaped areas around the periphery of the site, and along Willow Street. Increase these areas in size wherever possible.

INTENT: To provide visual screening of the parking lot from surrounding viewshed.

4. **RECOMMENDATION:** Redesign parking area to allow retention of significant mature vegetation.

INTENT: To preserve existing valuable vegetation where feasible.

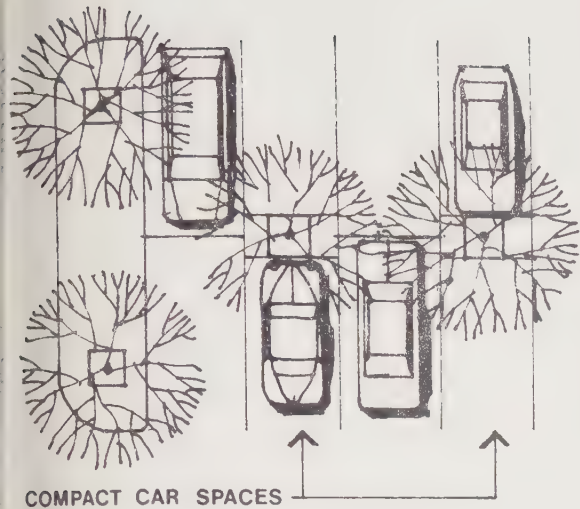
SPECIFIC PROVISIONS: The landscape architect in cooperation with the architect should determine which trees are best subjects for preservation.

5. **RECOMMENDATION:** Retain the post office building in its present location to provide a visual link between the downtown and the detention facility site.
INTENT: To visually integrate rather than separate the detention facility site and the surrounding area.
6. **RECOMMENDATION:** Landscaping along Pine Street diversion should emphasize continuity between Pine Street approach from the south, and Court Street.
INTENT: To recover the sequential effect of the approach lost by blocking of the view toward the Civic Center.
SPECIFIC PROVISIONS: Continue existing street tree planting on both sides of Pine Street, to Court and Ward Streets. A double line of trees on the facility side of the Pine Street diversion would serve to buffer the visual impact of the delivery entrance, loading dock, and parking area, and would redirect the eye along Pine Street to Court Street. Under-story plantings in conjunction with large-crowned trees would further serve to screen the building.
7. **RECOMMENDATION:** Remaining half-block southwest of the site between Thompson, Mellus, and the Pine Street diversion now proposed as parking area would better serve as a small park. If necessary for parking, the area should be landscaped to be compatible with Pine Street approach (See above Recommendation #6.)
INTENT: To reinforce the sequential effect of the Pine Street approach, and to minimize views of the detention facility structure from South viewshed.
8. **RECOMMENDATION:** If parking area is not reduced overall, use the area now designated for landscaping along the facility side of the Pine Street diversion for additional parking, and increase proportionately the landscaped area along the east boundary of Willow Street.
INTENT: To locate limited on-site landscape areas where maximum use is possible.
SPECIFIC PROVISIONS: The area now provided south of the facility along the Pine Street diversion is larger than needed for a visual screen (see above, Recommendation #6). Because it serves no other purpose, this area is likely to be subject to trashing. A better use of the area would be for parking, well-screened from the Pine Street approach, thus making additional landscape area possible on the east side of the site where a larger area would be of greater value.

9. **RECOMMENDATION:** Landscaping for visual buffers and screens should be functional, and compatible in appearance with that of surrounding areas.

INTENT: To maintain continuity with surrounding areas through landscaping.

SPECIFIC PROVISIONS: Deciduous trees used in surrounding areas, such as sycamores, valley oaks, red horsechestnuts, bigleaf maples, and California walnuts, should be used where screening does not require broad-leaved evergreens. Screening may be accomplished through use of both deciduous and broad-leaved evergreens of different heights. (See sketch accompanying recommendation #2.) Parking areas should be provided with tree planting areas in central spines along parking strips, with alternate small car parking. (See accompanying sketch.) Trees selected for parking area should provide a canopy effect to screen views of parking area from higher elevations in the East Hillside viewshed, to provide shade in the summer and rain shelter in the winter. Broad-leaved evergreens provide year-round screen and shelter. Trees for screening should branch no higher than 10'-12' above ground level. Multi-trunked species are desirable for perimeter screening.



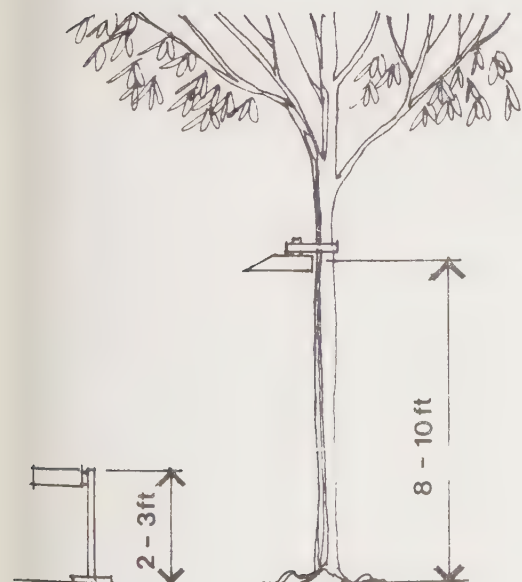
COMPACT CAR SPACES

PARKING AREA LANDSCAPING

10. **RECOMMENDATION:** Lighting at night should be of a minimum intensity and frequency necessary for security.

INTENT: To reduce visual intrusion of the site on viewshed areas and on viewpoints from surrounding areas.

SPECIFIC PROVISIONS: Parking areas should be lighted at low level, at heights of 2'-3' or attached to trees, at heights of 8'-10', thereby providing a filtered light when viewed from higher elevations. (See accompanying sketch.)



PARKING AREA LIGHTING

II. EXTERNAL FACILITY DESIGN

1. **RECOMMENDATION:** Consider horizontal fenestration rather than vertical fenestration. The latter emphasizes the verticality of the structure from off-site, and much of the window space is not accessible to inmates.

INTENT: To de-emphasize the vertical height of the structure, while allowing inmates greater access to windows. Horizontal fenestration may also aid in

reducing behavior of inmates offensive to passers-by. (See Sensory Deprivation section for further discussion, page 20-28.)

2. RECOMMENDATION: Rooftop appurtenances should be designed to be as visually unobtrusive as possible.
INTENT: To minimize visual intrusion on the East Hillside viewshed.
SPECIFIC PROVISIONS: Solar panels and mechanical housing will be clearly seen from some parts of the East Hillside viewshed, and should be of nonreflective materials and colors which blend with the building.
3. RECOMMENDATION: Retain the grey color of the concrete outside walls of the facility. If concrete is color-treated, a color should be selected which will harmonize with existing Civic Center buildings.
INTENT: To maintain compatibility of the structure with existing Civic Center buildings.
4. RECOMMENDATION: Provide textural treatment of the outside concrete panels.
INTENT: To increase visual interest on outside walls, and to reduce massive appearance of the building.
SPECIFIC PROVISIONS: Textural treatment should be simple and in keeping with the building architecture. The outside walls of the courtyards could be penetrated by openings, so as to break up the mass of the building to provide external visual interest, and allow light and air to the internal courts.
5. RECOMMENDATION: Lighting of the building at night should be of a minimum intensity and frequency necessary for security.
INTENT: To reduce visual intrusion of the building on viewshed areas and on views from surrounding areas.
SPECIFIC PROVISIONS: Lighting of the interior courtyards at night should be restricted, possibly operated by inmates as needed. Lighting of the rooftops of the modules should be avoided.

ASSESSMENT OF SENSORY IMPACTS
OF INTERNAL FACILITY DESIGN

ADDENDUM TO VISUAL ANALYSIS, BACKGROUND REPORT FOR THE CONTRA
COSTA COUNTY DETENTION FACILITY ENVIRONMENTAL IMPACT REPORT

Prepared for

THE COUNTY OF CONTRA COSTA

by

SEDWAY/COOKE
Urban and Environmental
Planners and Designers
San Francisco, California

Associated Consultant:

Paul S. D. Berg, Ph.D., Psychologist

February, 1977

ASSESSMENT OF SENSORY IMPACTS OF INTERNAL FACILITY DESIGN

ADDENDUM TO VISUAL ANALYSIS, BACKGROUND REPORT FOR THE CONTRA COSTA COUNTY DETENTION FACILITY ENVIRONMENTAL IMPACT REPORT

I. INTRODUCTION

There has been an increasing consciousness of the effect of the environment on man's physical and mental conditions, with the adverse effects most obvious in institutional settings such as hospitals and prisons.

The function of this analysis is to examine this relationship as it pertains to the sensory needs of inmates. It does not include an analysis of the internal functioning of the facility except where it may influence inmates' sensory experiences.

The user of this report is cautioned that there is no clearly established causal relationship between specific physical conditions and human response. There is, however, an evolving body of knowledge, generally referred to as environmental psychology, which has directed attention to problems of sensory deprivation, and psychological literature amply demonstrates that there are definite disadvantages to sensory deprivation in environments such as hospitals and prisons.

Two basic premises underlie this analysis: The first is best expressed by the concluding statement of the research by Paul Berg, Ph.D and Gretchen White, M.A., in a study titled Psychological Consultation and Recommendations for the Design of the Proposed Detention Facility of Contra Costa County which is appended to this report and which provides much of the basis for the findings presented below:

... "the focus of the recommendations included in the body of this report is a way of formally proposing that life in a correctional facility be as similar to life "on the outside" as possible. What we are proposing for inmates are things that all of use relate to and take for granted in the places we live, work and play. Although the philosophical point behind this proposal may be considered as empathic, these recommendations are based on sound psychological reasons. It appears to us to make infinitely more sense to treat an individual within the context, as far as is possible, from which he came and to which he will return, rather than adding another area in which he will need to "adjust" upon leaving the institution. The idea of holding a person in a very controlled, low-arousal setting for an extended period of time, only to return him to a much more demanding, complex environment seems unnecessarily stressful to the inmate, and wasteful of the time, effort and money involved in creating a new type of detention facility."

The second premise is that although no firm causal relationship can be established at this time between physical conditions and physical and mental conditions produced by lack of sensory stimulation, the design of the detention facility should avoid design situations which have a potential for adversely affecting inmates.

A detention facility differs from a prison facility in that a large proportion of the inmates are being housed temporarily while awaiting trial; approximately 70% of the inmates are not sentenced and are released after trial. Length of stay ranges from one day to 315 days. Approximately 85% of the unsentenced inmates stay from one to 60 days. Sentenced inmates stay for longer periods; approximately 72.8% of the sentenced stay from 31-315 days. The psychological needs of short-term inmates differ from those of long-term inmates. This analysis addresses primarily the effects of the design on short-term inmates but considers also measures to mitigate effects of sensory deprivation on long-term inmates.

The analysis which follows includes a statement of sensory-related needs, provisions made by the proposed facility design, problems created by the present design in achieving the stated need, and suggested mitigation measures.

The analysis is based on preliminary design plans for the detention facility. Its function is to provide input to the design process before final design decisions are made. Thus in many instances the findings may address problems which are currently under study. In other instances, present designs have yet to deal with certain aspects, such as interior furnishing. In the latter case, this analysis helps provide guidelines for these subsequent decisions.

In conclusion, it should be noted that the design of the detention facility has sought to eliminate the institutional features which lead to sensory deprivation problems and represents a laudable effort to correct past problems. The problems which are noted in this report are produced in part by two sources. The first is the attempt to provide the surrounding neighborhood with maximum visual protection from the interior of the facility. The second source of problems is the subdivision of the basic living module, which destroys in part the basic concept underlying modular design.

II. ASSESSMENT OF THE INTERNAL FACILITY DESIGN

I. SENSORY-RELATED NEED: Degree of variation and control over social contact.

PROVISIONS: The proposed facility design generally is successful in providing opportunity for both privacy and social contact. Individual rooms guarantee privacy in most cases, and the common interior areas (dayrooms) allow flexibility and variation in size and type of group formation.

PROBLEMS: Within each module at Level 2, two to four rooms are oriented with windows facing directly onto the courtyard. Since these rooms are at the same level as the courtyard, day and night use of the courtyards will infringe on the privacy of the inmate occupants. Noise interference from courtyard activities is also a potential problem. A total of 22 cells are so affected. At Level 2A, 48 rooms also face on to the courtyard. Since these rooms are a level above the courtyard, no major problems of interference of the inmates' privacy are anticipated from courtyard use. However, these rooms face each other across the courtyard at either a distance of 30 or 40 feet. Rooms occupied by unsentenced and sentenced women face on to rooms occupied by unsentenced

men. This conflict can be eliminated by increasing the height of the wall which divides the courtyards. Such a change would have an adverse effect on the courtyard. (See #4 below for further discussion of problems associated with these rooms.)

MITIGATION MEASURES: To the extent possible the building design should be revised to reduce or eliminate the number of rooms so affected. Where rooms with these orientation problems remain, the rooms should be furnished with shades or drapes to allow the inmates the freedom to maintain privacy within their room. It should also be the policy to assign inmates with shortest likely stay in these rooms.

2. **SENSORY-RELATED NEED:** Variation in field of vision; opportunities for close, intermediate, and distant views.

PROVISIONS: Excluding medical and intake housing units, 209 rooms are located on exterior walls and have the potential for long range views. Another 78 rooms face on to the interior courtyards with length of view varying from 30 to 40 feet and an additional 46 rooms face on to interior roof surfaces and other rooms. Approximately half of these latter rooms have a length of view limited to 54 feet and half to a length of view of 112 feet.

PROBLEMS: For the exterior-located rooms, the potential for long-distance and sustained viewing is severely limited by the placement of the windows. Present plans call for the location of windows, either 18" or 24" inches wide, to be located in the corner of each room immediately above the inmates' bed. Such a location makes viewing both uncomfortable and relatively inaccessible. For rooms oriented on the courtyard and interior roof surfaces problem inmates are denied any opportunity for long-distance views.

Within the modules views are limited to either close range or intermediate views. In the typical module the length of view would be limited to a maximum of 100 feet. In many portions of the facility, however, even more severe sight restrictions would occur in areas occupied by juveniles, sentenced women, unsentenced women, and disciplinary separation units.

Within the courtyards the height and width of the yard space also eliminate any opportunities for long-distance views. This condition could worsen with the addition of overhangs to prevent escape which are not yet specified in the facility plans.

MITIGATION MEASURES: The problems associated with exterior rooms can be solved by providing horizontal windows rather than narrow vertical windows. These should be centered within walls and placed at a comfortable viewing height. Horizontal windows would also tend to prevent inmate behavior which is offensive to passers-by. It should be noted that, from a visual standpoint, the problem of offensive inmate behavior being a nuisance to surrounding areas or residents appears to be over-emphasized, with the result that protection of the surrounds has resulted in an internal environment of unnecessary sensory deprivation. The size of the windows, the long distances between the rooms and outside circulation systems or residences, and ample provision of landscape area for screening combine to make visual intrusion by inmates unlikely. For rooms with an inward orientation, horizontal windows should also be provided. This, however, will not solve the problem of restriction on long-distance views. Short of a major redesign of the facility no reasonable mitigation measures are

possible. Penetration of exterior walls of courtyards with openings, so that long-distance viewing can take place from within the courtyards, would be desirable. The provision for external views from the courtyards takes on special importance for inmates occupying interior rooms.

3. **SENSORY-RELATED NEED:** Continually varying sensory stimulation.

PROVISION: Provision in the design of individual modules for a series of different areas, i.e. individual rooms, upper and lower common areas, outdoor courtyards, and library area provide many opportunities for sensory stimulation.

PROBLEMS: With the exception of inmates occupying exterior rooms, sensory stimulation is limited totally to a man-made environment. This problem is compounded by the size and design of the outdoor courtyards. High walls, concrete surfaces, little or no provision for planting or natural materials, almost total shade during a major portion of the year, and intense light and heat during the summer months are all problems associated with the courtyards. These conditions are also likely to lead to under-utilization of courtyards due either to cold, dank conditions or severe heat and lack of air circulation. Winter and summer shade patterns for a courtyard at Level 2 with a northwest orientation are shown in Figure A, Courtyard Shadows.

MITIGATION MEASURES: The following measures should be considered.

1. Revising the facility design to change the size, proportion and orientation of the courtyards so as to permit better light and air conditions.
2. Provide exterior openings in the courtyards in order to permit exposure to an external and less regulated environment. This will also serve to improve air circulation within the courtyards and reduce heat buildup during the summer and fall.
3. Plantings should be provided in the courtyards to minimize heat buildup and provide varied sensory stimulation. Due to the limited size of the courtyards, plant materials will generally need to be limited to perimeter plantings which do not further restrict the utilization of the space for outdoor activities. Vines on the concrete walls would be desirable, but use of them would have to take into consideration problems of making the space escape-proof.
4. Correction of the unvarying, featureless views experienced by inmates of the interior rooms cannot be readily resolved without major redesign of the facility. The main solution therefore depends upon improvement of the courtyard conditions. Consideration should also be given to assigning longer term inmates to exterior rooms.

4. **SENSORY-RELATED NEED:** Spatial mobility and exposure to variations in physical context.

PROVISIONS: Overall the facility design accommodates the need for spatial mobility and variations in physical context by providing for private rooms, common areas at several levels, outdoor space and additional access to the library area. In most instances the inmate has the freedom to move about and use any of these areas.

PROBLEMS: Although most of the modules would provide for considerable freedom of movement, problems are created when the module is divided in two. This occurs in the areas assigned to juveniles, sentenced women and the disciplinary separation unit. The severest problem occurs in the sentenced women's area. Here the inmates are restricted to small upper level common

ASSESSMENT OF SENSORY IMPACTS OF INTERNAL FACILITY DESIGN

CONTENTS

- I. INTRODUCTION
- II. ASSESSMENT OF INTERNAL FACILITY DESIGN

FIGURE A: Courtyard Shadows

NOTE: Paul S. D. Berg's Report, Psychological Consultation and Recommendations for the Design of the Proposed Detention Facility of Contra Costa County, referred to in this Addendum, is on file with the Contra Costa Planning Department and may be reviewed at the County Administration Building, Planning Department, Martinez, California.

areas and a small triangular shaped courtyard, use of which is further restricted by a stairway which connects the courtyard to the upper level.

Size of the courtyards also presents a problem. Although the goal of providing free and direct access to outdoor space is admirable, the size and dimension of these spaces will inhibit outdoor activities. This is especially true of the divided courtyards which are 900 square feet or less and often of irregular shape which further restrict their use.

MITIGATION MEASURES: The following measures are recommended. In part these coincide with previous recommendations regarding courtyard design.

1. Modify the module design to provide for smaller, but complete modules for sentenced women, juveniles and disciplinary separation units.
2. Increase the size of the courtyards and avoid divisions which produce triangular shapes and thus reduction of space utilization.
3. Consider policy by which inmates can have access to the large central courtyard on a regular or as needed basis for active physical exercise which cannot be accommodated in the module courtyards.

5. **SENSORY-RELATED NEED:** Degree of control over appearance and arrangement of living areas, and color and textural variations.

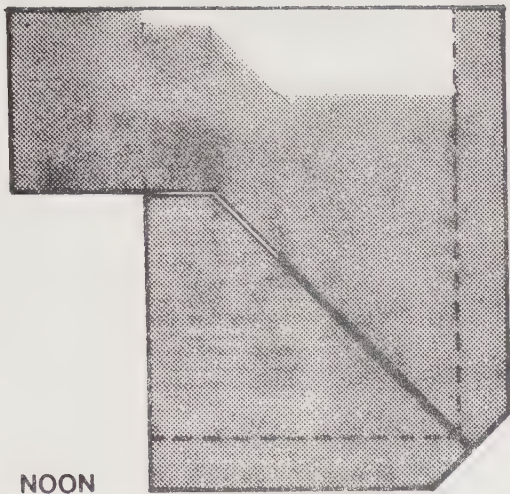
PROVISIONS: Because the design concept at this stage does not address interior decoration or furniture type and placement, responses here are limited to the following guidelines.

GUIDELINES: 1. Moveable furniture both in housing units and dayrooms should be provided.

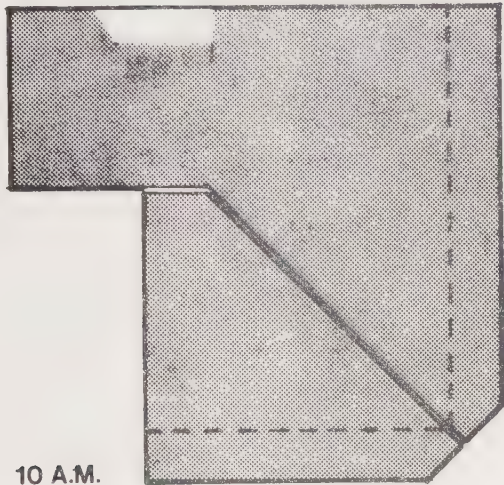
2. Color and textural variations should be provided in the courtyards as well as the dayrooms. This can be done with plants and/or paint.

3. Inmates should have control over furniture placement, lighting, heat, and decoration of their individual living area.

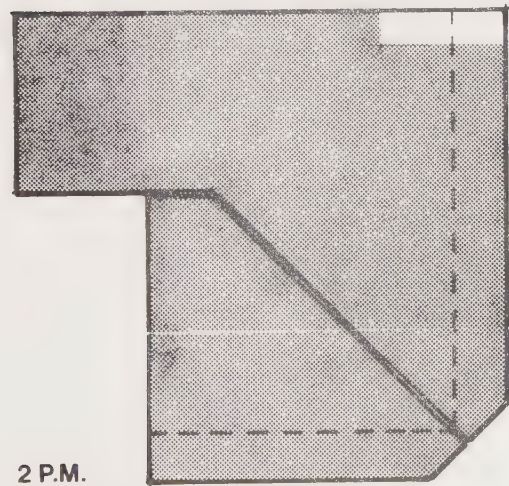
4. Furnishings and furniture, including toilet facilities within individual rooms, should be non-institutional in appearance.



NOON



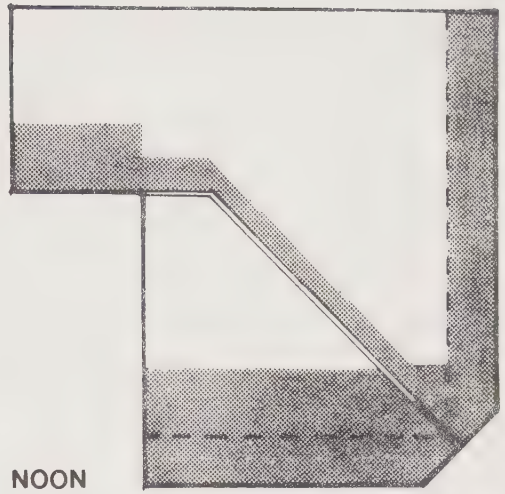
10 A.M.



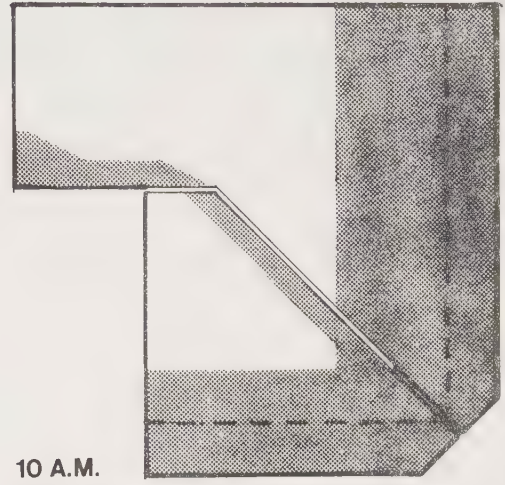
2 P.M.

JAN. 20 and NOV. 23

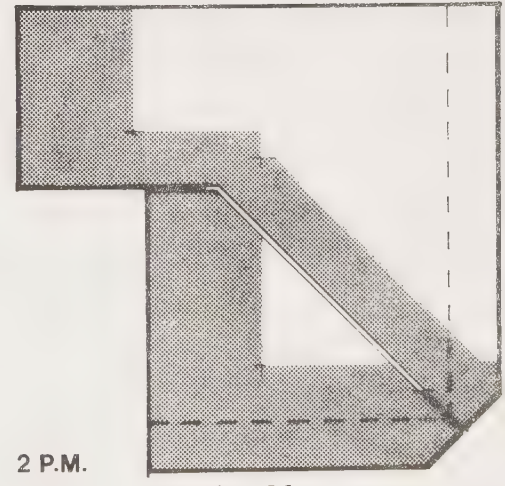
FIGURE A
Courtyard Shadows



NOON



10 A.M.



2 P.M.

MAY 22 and JULY 23

Chapter 21

SOCIAL IMPACTS

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Planning Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	21-1
SOCIAL-DEMOGRAPHIC SETTING	21-2
Contra Costa County	21-2
Martinez	21-10
Project Environs	21-14
Detention Facility Inmates	21-17
Detention Facility Staff and Visitors	21-17
SOCIAL-DEMOGRAPHIC IMPACTS	21-21
Countywide Impacts	21-21
Impacts Upon the City of Martinez Population	21-22
Impacts Upon the Project Environs Population	21-22
Impacts Upon Detention Facility Inmates	21-26
Impacts Upon Detention Facility Staff	21-30
Impacts Upon Visitors	21-31
ILLUSTRATIONS AND TABLES	
MAPS	
Map 1: Project Environs Statistical Area	21-15
FIGURES	
Figure 1: Population Growth, Contra Costa County: 1930-1970	21-5
Figure 2: Population Distribution by Age and Sex: 1975	21-6
Figure 3: Household Income Distribution, Contra Costa County: 1975	21-9
TABLES	
Table 1: Contra Costa County Population: 1940-1990	21-4
Table 2: 1975 Census Demographic Statistics	21-7
Table 3: Racial Composition, 1970	21-7
Table 4: 1975 Census Income Distribution	21-8
Table 5: 1975 Census Socio-Statistical Measures	21-11
Table 6: 1975 Census Housing Data	21-12
Table 7: Population Growth: 1900-1975, City of Martinez	21-13
Table 8: Age, Sex, and Race of Contra Costa County Detention Facility Population: April 15, 1976	21-18
Table 9: Characteristics of the Contra Costa County Detention Facility Population: April 15, 1976	21-19
Table 10: Length of Stay Profile for Inmates of Contra Costa County Detention Facilities	21-20

INTRODUCTION

An important element in the evaluation of a project's impact is the determination of its impact upon the human environment. This chapter examines the human impacts of the proposed Contra Costa County Detention Facility project. The project will affect a number of social groups, ranging from the total county population, to those who will live and work in the project, the Detention Facility staff and inmates. Each group will be affected in different ways and with differing intensity. The focus of this chapter is broad; it encompasses essentially all aspects of the human environment except those of an economic nature. Economic Impacts are discussed in the Economics Chapter (No. 22).

The report is organized into two sections. The first provides a description and analysis of the project's social-demographic setting, with emphasis upon those features most relevant to an evaluation of the project's social impacts. In the second section, the project's impacts upon the social environment are evaluated and discussed, and methods of reducing specific adverse impacts are presented. Since the project affects various County social groups in differing ways and with varying intensity, each group is examined separately, as are the impacts upon the groups.

Data for this chapter were derived from a number of sources; notably the 1975 Contra Costa County Special Census, which provides the most recent compilation of comprehensive social and demographic data for the County. Other data sources include the 1970 U. S. Census (San Francisco-Oakland SMSA), the California Statistical Abstract, the Contra Costa County Profile, the City of Martinez General Plan, the Environmental Impact Report for the previous "County Detention Center" proposal, and the Sheriff-Coroner's Office.

SOCIAL - DEMOGRAPHIC SETTING

In describing the project's social-demographic setting, the various social groups affected by the project are examined. The first group this chapter examines is the total county population; attention is focused upon its population subgroups most likely to be affected by or involved in the criminal justice process, such as young adults, low income persons, and minorities. The citizens of Martinez and the population of the neighborhood surrounding the project site are also examined. These two groups are studied because they are likely to be directly impacted because of the project's location. The examination of the neighborhood surrounding the project site is concerned not only with those who live in the area but also those who work, visit, or operate businesses there. The final groups examined are those most directly affected by a detention facility, the inmates, facility staff, and visitors.

In discussing the social-demographic setting, emphasis is placed upon social and demographic characteristics most relevant to the detention facility and its impacts. The Detention Facility Advisory Committee's (DFAC) Internal Capacity Subcommittee identified a number of characteristics which committee members felt were particularly relevant to the project.¹ These included the age-sex structure of the population, economic status - particularly the gap between the rich and the poor, housing quality, education levels, and unemployment. The Subcommittee felt that changes in the size of the high crime age groups would have more impact upon jail population levels than would the growth of the total population. It also felt that the gap between the rich and the poor, poor housing conditions, low education levels, and unemployment were factors which tend to result in increasing criminality and a resultant rise in detention facility population levels.

Other factors relevant to the project's impacts concern the stability and cohesiveness of social groups. Census variables indicating length of time lived in unit, levels of homeownership, and commute patterns of residents are included to provide an indication of stability.

Contra Costa County

Contra Costa County, situated on the eastern shore of San Francisco and San Pablo Bays, is one of the nine counties of the San Francisco Bay Region. Although in this report, the county is often discussed as if it were a separate and distinct social entity, it should be remembered that Contra Costa is an integral part of the metropolitan community. The county serves as a bedroom community for many non-county metropolitan area workers, and at the same time provides employment for persons living outside of the county. The degree of Contra Costa's integration within the Bay Area is evidenced by the 1975 Census finding that 40.7% of the county's workers commuted outside of the county to work.

¹ Detention Facility Advisory Committee's Internal Capacity Subcommittee, Report of the Detention Facility Advisory Committee Internal Capacity Subcommittee, May 18, 1976.

Contra Costa County has a diverse social environment, which includes the old, intensively urbanized areas and pre-World War II suburbs of west county, the sprawling suburbs of central county, and the rurally oriented communities of east county. The county's demographic diversity should be kept in mind when reviewing the information presented here.

Contra Costa County has grown rapidly since 1940, when its population stood at 100,000. Population tripled between 1940 and 1950 and continued to increase rapidly, reaching 555,805 at the time of the 1970 Census. Growth has slowed since the mid-1960's; the rate of population increase since 1970 has been approximately 1% per year. Future projections suggest that this modest rate represents a new trend in the county's growth pattern. A rate of increase of approximately 1½% per year is projected for the next 10-15 years by the County Planning Department.

As Contra Costa County has grown and diversified, the demographic characteristics of its population have changed (see Table 2). A significant contributing factor has been the low birth rates of the past 10 years. Recent years have seen a noticeable aging of the county's population as the proportion of elderly has increased and the number of young children has declined. The change in the county's age structure is particularly important to the detention facility project because facility inmates tend to be drawn primarily from a specific segment of the population, young adult males. This groups has traditionally accounted for a high proportion of arrests and jail bookings, both nationally and in Contra Costa County. The changing size of the young adult male population group is likely to affect future jail population levels. In the period 1985-2000, the growth rate of this population group is expected to diminish, hopefully reducing the rate of growth of the jail population. An analysis of the county's changing age structure and its impact upon inmate population is provided in the Inmate Capacity Chapter (No. 5).

Another significant demographic trend is the diversification of the county's racial composition (see Table 3). Race is relevant to the detention facility project because minority groups have traditionally comprised a relatively high proportion of jail populations, because of such factors as economic disadvantage, high unemployment levels, alienation, etc. Although in 1940 less than 5% of the county's population was non-white, by 1970 the non-white segment of the population had increased to nearly 20%. The two predominant minority groups in 1970 were Spanish/Mexican-American/Chicano, which accounted for 9.3% of the total population, and Blacks, with 7.5%. The county's minority groups tend to be concentrated in specific areas of the county, including such areas as Richmond, Pittsburg, and Brentwood.

Contra Costa is one of the wealthiest counties in the state; the 1975 California Statistical Abstract ranked Contra Costa first in the state in median income based on 1973 income tax returns. The county's wealth has resulted in part because it serves as a bedroom community for many of the Bay Area's executives. However, the county is not without poverty, as the large number of high income individuals is counter-balanced by a significant proportion of low income persons (see Table 4 and Figure 3). In 1974, 17.3% of the county's households had incomes in excess of \$25,000, while 15.9% had incomes below \$6,000. A comparison of 1970 and 1975 census data suggests that the gap between those at the extreme ends of the economic spectrum has been widening somewhat. Residentially, low income

Table 1

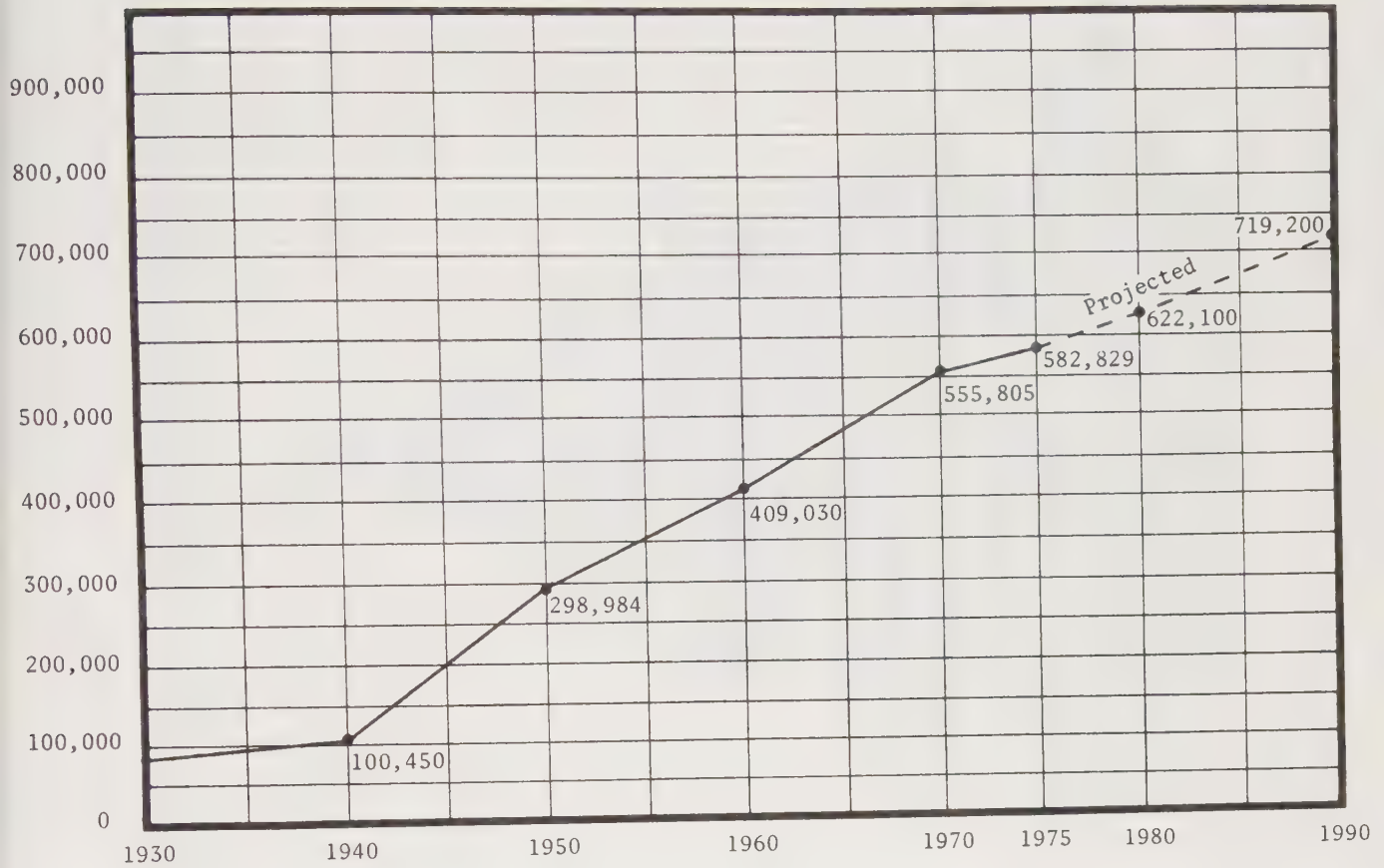
CONTRA COSTA COUNTY POPULATION: 1940-1990

<u>Year</u>	<u>Population</u>	<u>Percent Change</u>
1940	100,450	
1950	298,984	197.6
1960	409,030	36.8
1970	555,805	35.9
1975	582,829	4.9 (1970-1980 rate = 11.9%)
1980 ¹	622,000	6.8
1990 ¹	719,000	15.6

¹Projection by Contra Costa County Planning Department.

Source: U. S. Bureau of the Census, 1975 Contra Costa County Special Census, Contra Costa County Planning Department.

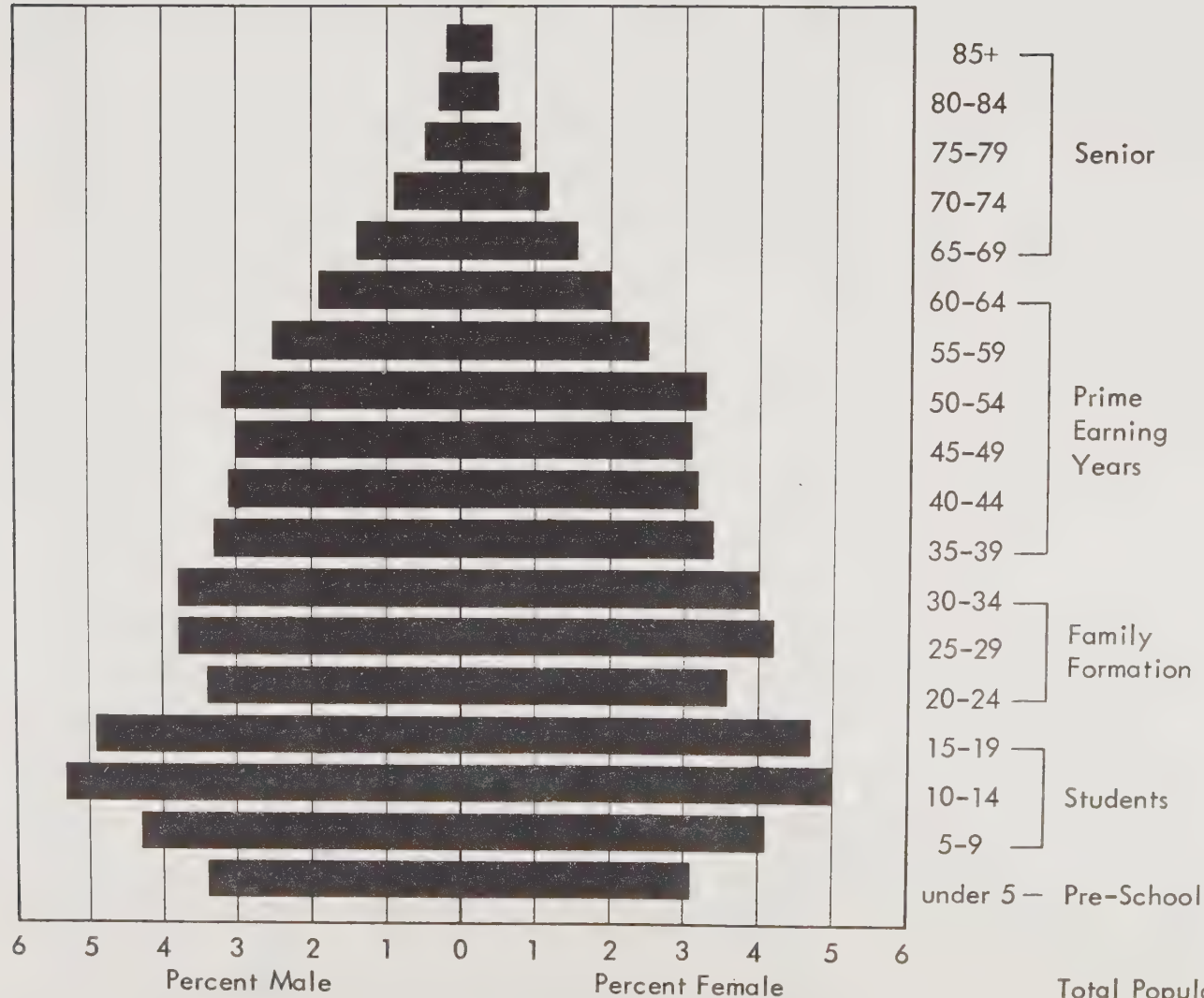
Figure 1
POPULATION GROWTH
CONTRA COSTA COUNTY: 1930-1990



Source: U. S. Bureau of the Census, 1975 Contra Costa County Special Census,
Contra Costa County Planning Department.

Figure 2

Population Distribution by Age & Sex: 1975



Total Population: 582,829

Source: 1975 Special Census of Contra Costa County.

Table 2

1975 CENSUS DEMOGRAPHIC STATISTICS
CONTRA COSTA COUNTY, CITY OF MARTINEZ, PROJECT ENVIRONS

Data Item	Contra Costa County	City of Martinez	Area A ¹	Area B ²
Total Population	582,829	18,702	296	1,005
Percent Male	49.3%	49.5%	74.0%	49.7%
Percent Female	50.7%	50.5%	26.0%	50.3%
Median Age	30.0 yrs.	29.2 yrs.	40.2 yrs.	30.7 yrs.
Average Age	32.5 yrs.	32.1 yrs.	40.8 yrs.	37.1 yrs.
Percent Under 18	31.5%	32.0%	7.4%	21.7%
Percent 65 and Over	7.9%	8.5%	11.8%	15.4%
Persons Age 65 and Over	45,591	1,588	35	155
Persons Age 0-5			10	75
Persons Age 6-11			7	55
Persons Age 12-13			1	23
Persons Age 14-18			10	75

¹Block Group 1, Census Tract 3160

²Block Group 1, Census Tract 3170

Source: 1975 Contra Costa County Special Census.

Table 3

RACIAL COMPOSITION
CONTRA COSTA COUNTY, CITY OF MARTINEZ, PROJECT ENVIRONS
1970

Race	Contra Costa County		City of Martinez		Area A ¹		Area B ²	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Population	582,829	100.0%	16,506	100.0%	353	100.0%	1,060	100.0%
White	447,924	80.6%	14,313	86.7%	253	71.7%	937	88.4%
Spanish ³	51,903	9.3%	1,552	9.4%	25	7.1%	106	10.0%
Black	41,620	7.5%	323	2.0%	75	21.2%	5	0.5%
American Indian	1,701	0.3%	94	0.6%	0	0.0%	8	0.8%
Oriental	7,068	1.3%	137	0.8%	0	0.0%	3	0.3%
Other	5,589	1.0%	87	0.5%	0	0.0%	1	0.1%

¹Block Group 1, Census Tract 3160. This data includes the detention facility inmate population.

²Block Group 1, Census Tract 3170.

³Spanish figures for block groups were not reported in 1970; the figures provided are based on the percentage of Spanish persons in the total census tract.

Source: U. S. Bureau of the Census.

Table 4

1975 CENSUS INCOME DISTRIBUTION
CONTRA COSTA COUNTY, CITY OF MARTINEZ, PROJECT ENVIRONS

Income Category	Contra Costa County		City of Martinez		Area A ¹		Area B ²	
	Numeric Distribution	Percentage Distribution	Numeric Distribution	Percentage Distribution	Numeric Distribution	Percentage Distribution	Numeric Distribution	Percentage Distribution
0-\$3,000	14,596	7.2	610	9.4	22	25.0	57	12.3
\$3,000-\$5,999	17,464	8.7	691	10.6	25	28.1	105	22.8
\$6,000-\$8,999	18,016	8.9	631	9.7	11	12.5	74	15.9
\$9,000-\$14,999	50,604	25.1	1,585	24.4	17	18.8	117	25.4
\$15,000-\$19,999	37,425	18.5	1,326	20.4	11	12.5	53	11.6
\$20,000-\$24,999	28,767	14.3	1,000	15.4	3	3.1	23	5.1
\$25,000 or more	34,883	17.3	665	10.2	0	0.0	32	6.9
Median Income	\$15,026		\$14,126		\$5,666		\$8,795	

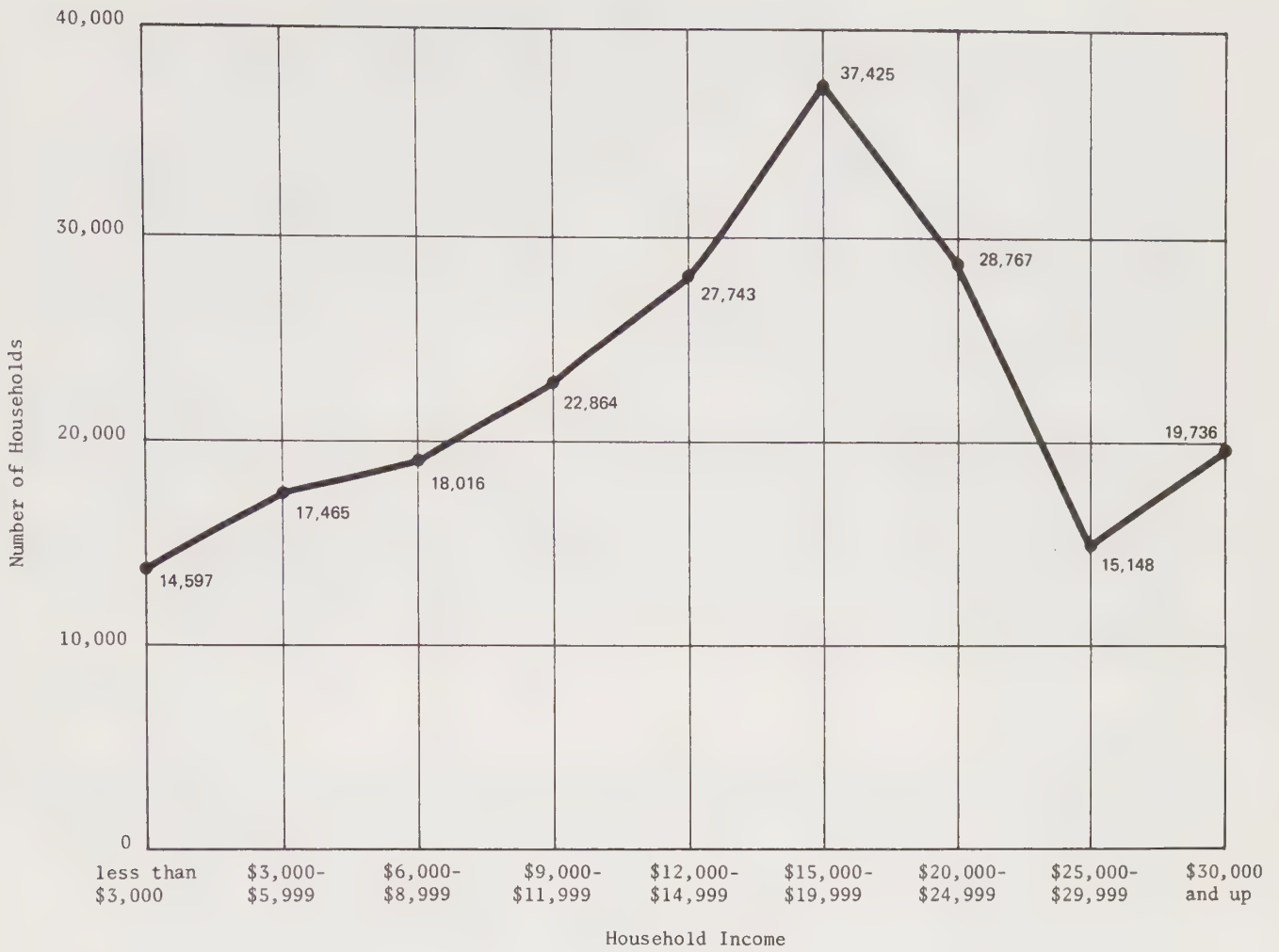
21-8

¹Block Group 1, Census Tract 3160

²Block Group 1, Census Tract 3170

Source: 1975 Contra Costa County Special Census.

Figure 3
HOUSEHOLD INCOME DISTRIBUTION
CONTRA COSTA COUNTY: 1975



Source: 1975 Contra Costa County Special Census

persons tend to be concentrated in the Richmond-San Pablo area, Pittsburg and West Pittsburg, the east county farm areas and Central Martinez. The county's high income residential areas are located in the hill areas of central county, which include such communities as Orinda, Lafayette, Danville, Alamo and Moraga.

The 1975 Census provided information concerning such social indicators as education, mobility and commute patterns (see Table 5). In general, Contra Costa County residents are well educated; the median education level for household heads in 1975 was 13.0 years, equivalent to completion of one year of college. County residents are also highly mobile. 1975 Census workplace data reveals that the county has large commuter population; in 1975, 40.7% of employed county residents traveled outside of the county to work.

1975 Census housing statistics (see Table 6) indicate that the county's housing stock is generally in good condition. Only 3% of the dwellings in the county were found to be in unsound condition. Although the proportion of multiple units has been growing, in many areas of the county, single family homes still satisfy the shelter needs of most county residents. In 1975, 70% of the county's dwellings were single family homes, 27.5% were multiples, and 2.5% were mobile homes. Sixty-nine percent of county residents own their own homes; in 1975, 5.5% of the county's dwellings were vacant, and the median monthly housing payment in 1974 was \$195.

Martinez

The social composition of the City of Martinez reflects the diversity of the county in many respects. Martinez is at the same time an old, industrially-oriented city, the home of a large oil refinery, and an expanding suburban community. Martinez was one of the largest cities in the county in the first decades of the century, but it has declined in prominence as other parts of the county have grown more rapidly. However, in the last 15 years Martinez has experienced a resurgence of growth, as suburban neighborhoods have developed in the southern part of the city. Between 1960 and 1975, the population of Martinez nearly doubled, from 9,604 to 18,702. In 1975, the southern suburban part of the city (south of Highway 4) contained half of the city's population, 9482 residents.

In many respects, Martinez can be viewed as composed of two separate areas. The northern area of the city is older, declining in population, and has a small town character, while the southern area is more recently developed, growing, suburban in nature, and resembles other central county communities. In addition the two areas are physically separated by hills and a freeway, they have significantly different socio-economic characteristics, and residents of the southern area are frequently oriented toward central county rather than to central Martinez. Because of this dichotomy, and because there is little potential for impact in the South Martinez area, it was decided to focus attention upon the area of town which contains the project site, North Martinez. The following section focuses particularly upon the proposed project's immediate environs. Information for the entire City of Martinez is also presented in the next section, as well as in Tables 2 through 7.

Table 5

1975 CENSUS SOCIO-STATISTICAL MEASURES
CONTRA COSTA COUNTY, CITY OF MARTINEZ, PROJECT ENVIRONS

Data Item	Contra Costa County	City of Martinez	Area A ¹	Area B ¹
Percent of Workers ³ Working in Martinez	-	31.4%	54.6%	47.9%
Percent of Workers ³ Working Within County	59.3%	74.4%	90.9%	86.9%
Percent of Workers ³ Working Outside County	40.7%	25.6%	9.1%	13.1%
Percent Married Couple Households	72.5%	71.6%	31.0%	58.0%
Median Education Level Head of Household	13.0 yrs.	12.0 yrs.	12.0 yrs.	12.0 yrs.
Average Length of Time Lived in Dwelling	7.3 yrs.	7.1 yrs.	5.8 yrs.	9.1 yrs.
Median Length of Time Lived in Dwelling	4.3 yrs.	4.0 yrs.	3.6 yrs.	5.8 yrs.
Median Household Income: 1974	\$15,026	\$14,126	\$5,666	\$8,795
Percent Unemployment ⁴	5.4%	5.0%	10.9%	7.2%

¹Block Group 1, Census Tract 3160

²Block Group 1, Census Tract 3170

³Includes household heads and second wage earners only.

⁴The Census computed unemployment rate differently than does the State Employment Development Department. Data for Area A does not include data for County Jail inmates.

Source: 1975 Contra Costa County Special Census.

Table 6

1975 CENSUS HOUSING DATA
CONTRA COSTA COUNTY, CITY OF MARTINEZ, PROJECT ENVIRONS

Data Item	Contra Costa County	City of Martinez	Area A ¹	Area B ²
<u>Housing Unit Summary (1975):</u>				
Total Housing Units	213,521	6,793	106	496
Percent Single Family	69.9%	72.3%	28.3%	63.9%
Percent Multiple Family	27.5%	27.7%	71.7%	36.1%
2-4 Units per Structure	11.0%	16.1%	19.8%	24.4%
5+ Units per Structure	16.5%	11.6%	51.9%	12.7%
<u>Housing Condition (1975):</u>				
Percent Sound Units	97.1%	96.4%	75.9%	96.5%
Percent Unsound Units	2.9%	3.6%	24.1%	3.5%
<u>Housing Tenure (1975):</u>				
Own - no mortgage or mortgage paid off	15.9%	17.8%	7.7%	27.5%
Own - mortgage not paid off	54.3%	51.8%	0.0%	24.2%
Rent	29.1%	29.8%	89.7%	48.0%
Other	0.6%	0.5%	2.6%	0.3%
<u>Medium Monthly Housing Payment (1975):</u>	\$195.	\$184.	\$96.	\$117.
<u>Percent Vacant Units (1975):</u>	5.5%	4.2%	16.0%	7.1%

¹Block Group 1, Census Tract 3160.

²Block Group 1, Census Tract 3170.

Source: 1975 Contra Costa County Special Census.

Table 7

POPULATION GROWTH: 1900-1975
CITY OF MARTINEZ

<u>Year</u>	<u>Population</u>	<u>Numeric change</u>	<u>Percent Change</u>
1900	1,380		
1910	2,115	735	53.3%
1920	3,858	1,743	82.4%
1930	6,569	2,711	70.3%
1940	7,381	812	12.4%
1950	8,268	887	12.0%
1960	9,604	1,336	16.2%
1970	16,506	6,902	71.9%
1975	18,702	2,196	13.3%

Source: U.S. Bureau of the Census, Contra Costa County Special Census.

Project Environs

In examining the immediate social environment of the proposed project, it was decided to focus attention upon the North Martinez neighborhood most directly affected by the project. Examination of the immediate project area revealed the need to identify an area which both contained the area most highly impacted by the project and for which statistical information was readily available. Upon examination of census statistical areas, it was found that this general "impact" area was basically outlined by Block Group 1 of census tract 3160 and Block Group 1 of tract 3170. The two neighborhoods are respectively referred to as Area A and Area B (see Map 1). A review of the data for these two areas revealed that they are considerably different from one another in certain respects. Consequently in the following discussion the two described neighborhoods are sometimes discussed separately.

Because of the way in which the 1975 Special Census was conducted, the existence of the present main jail biased a few data items for Area A. Of the 296 residents of Area A reported by the 1975 Special Census, 152 were detention facility inmates. However, since only age, sex and employment status data were reported for the inmates, the remainder of the data reflects only the characteristics of the area's residents. In the following discussion, those data items biased by inclusion of inmate data are so designated.

Areas A and B comprise a neighborhood which in many respects is typical of downtown areas of small older cities. The commercial area, which is dominated by small retail establishments, gives the impression of having seen better days. The primary business street, Main Street, is active primarily at lunch time, when County employees are shopping or eating. The area immediately surrounding the business district contains numerous small industrial establishments, and small apartment buildings. Many of the residents in this area are middle-aged and elderly single men, some of whom are transients. Moving further away from the business area there are residential areas of older single family homes, many of which are occupied by elderly families who have lived in the area for many years. Also in the area is the County government complex, which provides a bit of contrast in an otherwise small town setting.

An analysis of statistical information concerning residents of the jail environs, Areas A and B, reveals that these neighborhoods are quite unlike the county mean. Both are older areas which have experienced mild declines in population in recent years. Demographic statistics (see Table 2) indicate the population of Areas A and B is older than the Martinez norm; there is a high percentage of elderly residents and relatively few young residents. The Census data provides measures of the number of school children in Areas A and B in 1975. There were 62 children of elementary school age, 24 of junior high age, and 85 of high school age. Racially, the project environs population (exclusive of the inmate population) reflects the City of Martinez distribution, predominately white with a moderately large Spanish surname/Chicano population (see Table 3).

Areas A and B serve as a residential area for many low to moderate income persons (see Table 4). In 1975 the median household incomes in Areas A and B were \$5,666 and \$8,795 respectively, levels roughly half of the citywide median of \$14,126.

Area A - Block Group 1, Census Tract 3160
 Area B - Block Group 1, Census Tract 3170

The 1975 countywide Special Census provided information for such statistics as workplace, marital status, residential stability, and unemployment (see Table 5). Workplace data indicate that the project environs provide a source of housing for persons working locally. Approximately half of the working residents of Areas A and B were employed in the City of Martinez. Additionally, few environs residents work outside of the county while fully a quarter of the city's workers do. The two environs neighborhoods exhibit different residential stability patterns. Area B is relatively stable, with the average length of time residents have lived in their present dwelling being 9.1 years; in contrast, the corresponding figure for Area A is 5.8 years. Unemployment statistics from the 1975 Contra Costa County Census showed high rates in both Areas A and B. The rate of Area A was 10.9%, more than double the citywide rate of 5.0%, while Area B had a 7.2% rate.²

The housing characteristics of the two environs neighborhoods are considerably different (see Table 6). Both are areas of older housing, but Area A is primarily comprised of multiple dwelling units (71.7%), while in Area B single family homes predominate (63.9%). Housing condition also varies considerably between the two areas; much of the housing in Area A is in poor condition, while Area B's housing stock is generally sound. While approximately one-half of Area B residents own their homes, only 10% of Area A residents do, which further indicates that Area A's population is quite mobile.

In summary, the project environs encompass two distinctive areas. Analysis of statistical information indicate that Area B is an older stable area characterized by low to moderate incomes, a high proportion of elderly residents, and a preponderance of single family homes. On the other hand, Area A exhibits many characteristics of a less stable, transient oriented neighborhood, as might be expected of an area comprised primarily of retail and small industrial establishments. In Area A, most dwellings are multiples, home owners are few, unemployment is high, incomes are low to moderate, there are few children, and length of residing is relatively short.

The project environs population also includes those who work and own businesses in the area as well as those who visit for business, shopping, or personal reasons. Unfortunately, data describing the characteristics of non-residents is generally lacking. However, Contra Costa County's Land Use and Transportation Study provides data concerning the number of businesses and employees in the area during 1970.³ The Study found that in a statistical area closely approximating Areas A and B there were 3,400 employees (primarily governmental) and 337 retail, other business, and industrial establishments. A decline in the number of County government employees working in the Civic Center since that time may have resulted in a small reduction in the number of persons working in the area. As of July 1, 1976, there were approximately 1700 County government employees

²The 1975 Census used a different procedure to measure unemployment rates than does the state. Consequently, data from the two sources is not comparable.

³County of Contra Costa, Land Use and Transportation Study, Contra Costa County Employment Inventory Analysis, October, 1974.

working in the Civic Center area. Although it is difficult to estimate the number of visitors to the area, the large number of retail and other business establishments as well as the presence of County government offices suggests it is substantial. An increase in visitors to the area is expected in a few years, when the joint regional/city waterfront park is completed.

Detention Facility Inmates

County jail inmates represent a continually changing population group. Although the membership of the group changes literally by the hour, the characteristics of any given inmate population group are likely to be quite similar to those of other inmate groups, because the inmate population tends to be drawn primarily from specific social, economic, age, and sex groups. A cross-sectional sample of Contra Costa County's inmate population is provided by an April 15, 1976 census of inmates taken by the Sheriff-Coroner's Office (see Table 8).

Data from the Sheriff-Coroner's survey indicate that the County's jail inmate population consists primarily of young adult males. On the survey day, 204 (92%) of the 222 inmates were males; and of these 204 males, 96% were between the ages of 15 and 40. The concentration of inmates in their 20's is noticeably strong; 60% of the males and 72% of the females were age 20-29. Racially, blacks constitute nearly half of the inmate population (46%), although countywide they comprise only 8% of the population.

Additional data further reveal the extent to which the inmate population is a very distinctive population subgroup. Approximately three-quarters (74%) of the inmates were unmarried; and the percentage of unemployed was also 74%. One-quarter of all inmates were not county residents. Of the inmates who were county residents, over one-half (54%) were from west county, an area which contains only 30% of the county's population. Central county, with over half (56%) of the county's population accounted for only 23% of county resident inmates; the remaining 23% of county resident inmates were from east county.

Data collected by the Sheriff's Office, and by the State Bureau of Criminal Statistics (BCS) during February and March 1976, provide an indication of the length of time inmates spend in County detention facilities. Unsentenced inmates are generally detained for only a short period of time; 38% of the unsentenced persons released during the two month BCS sample period were released within 4 hours, 62% were released within 24 hours, and only 8% were detained longer than one week. Comparable statistics for sentenced inmates (data include inmates released from all County facilities, including the rehabilitation center) indicate that 5% are released within 24 hours, 63% are released within one week, and 84% within one month. A length of stay profile for inmates detained in the main and branch jails was developed for a typical day in 1976 (see Table 10). The profile shows a typical distribution of inmates incarcerated at a given point in time.

Detention Facility Staff and Visitors

Persons whose activities will bring them into the proposed facility are the group most directly impacted by the project. In addition to inmates, this group includes

Table 8

AGE, SEX, AND RACE OF
CONTRA COSTA COUNTY DETENTION FACILITY INMATE POPULATION¹
APRIL 15, 1976

AGE	TOTAL			WHITE			BLACK		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Total all Ages	222	204	18	120	113	7	102	91	11
Under 10	0	0	0	0	0	0	0	0	0
10-14	0	0	0	0	0	0	0	0	0
15-19	27	26	1	18	18	0	9	8	1
20-24	76	69	7	43	40	3	33	29	4
25-29	60	54	6	34	32	2	26	22	4
30-34	29	26	3	11	10	1	18	16	2
35-39	20	19	1	6	5	1	14	14	0
40-44	4	4	0	4	4	0	0	0	0
45-49	4	4	0	3	3	0	1	1	0
50-54	1	1	0	0	0	0	1	1	0
55-59	1	1	0	1	1	0	0	0	0
60-64	0	0	0	0	0	0	0	0	0
65-74	0	0	0	0	0	0	0	0	0
75 and Over	0	0	0	0	0	0	0	0	0

¹Includes inmates of Main Jail, Branch Jail, Hospital, Santa Rita, and San Bruno.

Source: Contra Costa County Sheriff-Coroner's Office Survey.

Table 9

CHARACTERISTICS OF THE CONTRA COSTA COUNTY
DETENTION FACILITY INMATE POPULATION¹
APRIL 15, 1976

Stated Residence

55 Out of County
90 West County
39 Central County
38 East County

Employment Status

51 Employed
165 Unemployed
6 Student

Marital Status

162 Single
58 Married
2 Divorced

Charged Crimes

182 Felonies
15 Felonies and Misdemeanors
25 Misdemeanors

Sentenced - Unsented

167 Unsented
55 Unsented

¹ Includes inmates of Main Jail, Branch Jail, Hospital, Santa Rita, and San Bruno.

Source: Contra Costa County Sheriff-Coroner's Office Survey.

Table 10

LENGTH OF STAY PROFILE FOR
INMATES OF CONTRA COSTA COUNTY DETENTION FACILITIES

Days Served	Unsented Inmates		Sented Inmates		Total (Unsented and Sented)	
	Percentage Distribution ¹	Numeric Distribution ²	Percentage Distribution ¹	Numeric Distribution ²	Percentage Distribution	Numeric Distribution
1	6.6%	11.0	0.2%	0.1	5.0%	11.1
2	6.1	10.2	2.2	1.2	5.1	11.4
3	6.9	11.5	1.2	0.7	5.5	12.2
4	5.4	9.0	1.3	0.7	4.4	9.7
5	3.3	5.5	2.4	1.3	3.1	6.8
6	4.0	6.7	0.8	0.4	3.2	7.1
7	2.4	4.0	1.0	0.6	2.1	4.6
8-30	33.1	55.3	18.1	10.0	29.4	65.3
31-60	14.3	23.9	9.7	5.3	13.2	29.2
61-90	7.9	13.2	14.6	8.0	9.5	21.2
91-120	5.6	9.4	11.0	6.1	7.0	15.5
121-150	0.0	0.0	12.2	6.7	3.0	6.7
151-180	4.4	7.3	4.6	2.5	4.4	9.8
181-365	0.0	0.0	20.7	11.4	5.1	11.4
Total	100.0%	167.0	100.0%	55.0	100.0%	222.0

¹ Based on Contra Costa County incarceration data collected by the California Bureau of Criminal Statistics during February and March, 1976.

² Based on percentage distribution and total number of inmates incarcerated during April 15, 1976 census of Contra Costa County inmates.

Source: California Bureau of Criminal Statistics, Facility Sciences Corporation, Contra Costa County Planning Department.

the facility staff, visitors, and persons whose work will bring them into the facility, such as attorneys, bailbondsmen, and probation officers.

The staff of the proposed facility will include 134 deputized and civilian employees. There are other persons whose work will cause them to spend part of their work time in the facility. Such persons include district attorneys, public defenders, bailbondsmen, probation officers, police and sheriff personnel who transport inmates to the facility, teachers of classes for inmates, and ministers.

Visitors include friends and relatives of incarcerated persons, and consequently comprise a large and constantly changing population group.

SOCIAL-DEMOGRAPHIC IMPACTS

The intent of this section is to identify and evaluate the project's impacts upon the social environment. Attention is focused upon the social environments of the various groups likely to be affected by the project. In evaluating impacts, emphasis is placed upon the project's potential to cause an improvement in or deterioration of such characteristics of the social environment as livability, stability, cohesiveness, security, harmony, and lack of disruption or tension. Because of a desire to evaluate the significant impacts, at times this analysis departs somewhat from this theoretical context to examine other human impacts. This is done in instances where this chapter appeared the most logical place to discuss a specific human impact. Human impacts of an economic nature are examined in the Economics Chapter (No. 22).

The project will induce social, cultural, and demographic impacts which will affect the county's various social groups in differing ways and with varying intensity. Consequently, the impact assessment is presented separately for each group. The groups examined are: (1) Total County Population, (2) City of Martinez Population, (3) Project Environs Population, (4) Detention Facility Inmates, (5) Facility Staff, and (6) Facility Visitors. In analyzing the impacts upon each group, evaluations are made of both positive and adverse impacts, and suggestions of measures for mitigating the adverse impacts are presented.

In this chapter, particular attention is placed upon analyzing the project's impact upon its inmates. Since this subject is not discussed in great depth elsewhere in the Background Report, the inmate impacts discussion will be expanded to encompass identifiable human impacts upon the inmates.

In analyzing social and demographic impacts, it is often not possible to express the impacts in quantitative terms. Consequently, impacts must be described as small or great, substantial or insignificant, etc. Such inexact determinations may be subject to interpretation, but in most instances they provide the only method by which impacts may be discussed.

Countywide Impacts

Approval of the project will result in better protection for society because the project will provide adequate capacity and more secure detention. Improved protection is also likely to result from the provision of a better living environment

for those incarcerated. By providing prisoners with a more humane environment and improved programs, the facility is likely to help reduce the feelings of hostility and alienation of those who are incarcerated, which should result in greater harmony and less antagonism in society. In addition, by resolving a major county problem, approval of the project should result in a reduction in tension and anxiety throughout the county.

Adverse impacts will be minimal because the new facility will represent a considerable improvement over the existing facility. Perhaps the only significant negative impacts are theoretical; that is, those that result from selection of this particular project rather than other alternatives. For example, with regard to other possible alternatives, a primary concern is the construction of a single facility located in Martinez. A discussion of this and other alternatives along with a comparative evaluation of the impacts of this project and the alternatives is provided in the Project Alternatives Chapter (No. 6).

Impacts Upon the City of Martinez Population

Impacts upon the entire City of Martinez population include those discussed in the previous Countywide Impacts section. However, because of the location of the facility in Martinez, there will be additional impacts which will affect the Martinez population, and particularly the population of the project environs.

Citywide impacts include increased traffic congestion and the general inconvenience resulting from more people in the city. These impacts are discussed in the Traffic and Parking Chapter (No. 16). Impacts upon the project environs population are discussed in the following section.

Impacts Upon the Project Environs Population

This section examines the project's impacts upon the social environment of the neighborhoods immediately surrounding the project. The analysis is not confined to the residents of the area but also considers area businessmen, workers, and visitors. The area designated as the project environs is identified in the Social-Demographic Setting section of this chapter; it encompasses most of the Martinez central business district, the County Civic Center, and surrounding residential areas.

An important determinant of the project's impact upon the project environs population is the physical size and appearance of the structure. Visibility and prominence will tend to amplify the negative aspects of the facility because awareness of the facility's presence contributes heavily to its impacts upon people. An indication of the facility's size is provided by the following: the facility will house 383 inmates, all in single cells, and will provide space for recreation, classrooms, day rooms, visitation, an infirmary, courts, a library, and other facilities. In addition, the facility will be constructed to meet or better state standards regarding the amount of space required per cell, day room, recreation area, etc. To provide all the necessary facilities and satisfy the space requirements will necessarily result in a very large structure. The facility will be 4 stories high and have approximately 186,000 square feet of floor space.

It should be noted that the impacts of a detention facility are not new to Martinez. The present main jail is located at the corner of Pine and Escobar Streets only a few blocks from the project area. However, the existing jail is well-buffered from central Martinez residential and commercial areas because it is surrounded by County buildings and parking lots. The impact of its presence is additionally reduced because it is relatively small and is located between two large buildings. In addition, when the new facility is opened, the branch jail will be closed and its inmate population (approximately 50 persons per day) will be transferred to the new facility, thus increasing the number of persons detained in the Civic Center. The new facility will be considerably larger than the existing one, and will probably not be as well buffered from residential areas by other structures. Therefore, the local impacts will be greater than that of the existing facility.

Favorable impacts upon the project environs population include those which will accrue to all county residents (see the Countywide Impacts section). In addition, the project may help to improve the physical condition of the County Civic Center. Because of uncertainty over the project, the project site has been somewhat neglected in recent years. This has resulted in the somewhat unorganized and unkempt condition of the site. Replacing vacant lots and parking areas with buildings and landscaping is likely to improve the appearance of the Civic Center and enhance the area's attractiveness. In addition, resolution of the jail issue should result in a reduction in uncertainty over future development in the civic center area and thus may increase neighborhood stability.

Adverse social impacts primarily concern the project's potential for making the area a less pleasant and comfortable environment for living, working, operation of a business, or visiting. The project may affect the residential quality of adjoining residential areas and increase the potential for change, particularly along its southern and western boundaries. Specific adverse impacts include the project's effect upon the "small town" character of Central Martinez, the psychological impact of the presence of the inmate population, the likelihood of people moving out of residential areas, the effect on views from certain residences, the concern over released or escaped prisoners, and the possible transformation of residential areas to other uses. Additional social impacts relate to aesthetics, property values, and nuisance factors such as traffic and construction noise. In the following discussion, these impacts are examined separately.

Impacts Upon "Small Town" Character of Martinez

The Martinez General Plan expresses the desire of the City of Martinez and many of its residents to preserve the smaller scale "old town" environment of Central Martinez and the central city's "small town" character. There is concern about the impacts of large buildings upon the "small town" character and the effects of County expansion upon the stability of residential areas. The change of an area's character can be socially disruptive because it can transform a familiar and comfortable environment into an unfamiliar and uncomfortable environment which may be unpleasant or undesirable to some persons. Adverse impacts can result from both the process of change - change in itself can be disruptive - and

the transformation of a desirable environment to a less desirable one. On the other hand, some people view change as desirable.

Such concerns relate directly to the project, because such a large structure may contribute to a further deterioration of the "small town" character of Central Martinez. However, it should be noted that the existence of several large government buildings on the eastern edge of the central business district has already eroded the city's "small town" character to some extent.

Psychological Impact of Presence of Inmate Population

The increased size and visibility of the new facility will increase the environs population's awareness of the presence of the detention facility and the inmate population. This may cause an adverse psychological impact upon some local residents, workers and businessmen simply because some people experience feelings of aversion and discomfort from the proximity of prisoners and correction facilities.

People Moving Out of Neighborhood

It is possible that the construction of the project, both the act of constructing it and its presence once constructed, will induce some of the residents living nearest the site to sell their homes and move elsewhere. This in turn might result in a decline in neighborhood cohesiveness and character, and a deterioration of the local social environment. Such environmental changes would be manifest in such factors as loss of neighborhood friends, unfamiliar neighbors, less knowledge concerning people's behavior, and concern over the unpredictability of neighborhood turnover and change. In addition, those induced to move out of their homes would be similarly affected by a move from a familiar and stable social environment to a new and unfamiliar one.

Views/Visual Impact

Although the issue of visual impact is discussed in depth in the Visual Analysis Chapter (No. 20), it also deserves mention as an adverse social impact. Some residences on the lower slopes near Willow Street (on the east side of the project) will have their views dominated by the facility. This could result in decreasing neighborhood attractiveness in those areas affected.

Released Persons and Escaped Prisoners

There may be some concern that newly released prisoners will disturb persons and property in the areas near the project. Some people feel that a large facility located in close proximity to residential areas will provide increased opportunities for such activity. In addition, there is fear that escaped prisoners will intrude into residential areas. Although the occurrence of actual escapes are rare, roughly 4 to 5 persons escape from transporting officers each year according to the Sheriff-Coroner's Office.

Intrusion of Strangers into Neighborhood

Currently during jail visiting hours there are visitors and associated persons wandering about outside of the jail. The concern is that the larger size of the new facility and expanded visiting hours will increase this activity, and the new location, because of its proximity to residences, will cause a shift of the activity into residential areas. In addition, there is concern about crowds demonstrating at the jail and possible violence.

Threatened Change of Land Use and Rezoning

Economic forces might act to induce a change from residential to other uses in the areas near the project. Although this is a land use and economic issue, it is also a social issue because it affects neighborhood stability. Civic Center expansion might bring about a demand for office, commercial, or more intensive residential uses in areas bordering the Civic Center thus disrupting the existing residential stability.

A related concern is that the facility's presence will cause a decline in property values in bordering residential areas, and a consequent decline in residential desirability. If this occurs there might be a resulting demand for a change in the area's zoning to include uses less affected by proximity to a detention facility. Thus a decline or a rise in property values could cause a change of land use or zoning. The influence of a change in property values is discussed in the Economic Chapter (No. 22).

Any change in land use from residential to other uses induced by the project will result in a decline in the housing supply in the area, unless there is a conversion to multiple dwelling units. Because the project environs provides a source of low to moderate cost housing, a rapidly disappearing commodity, removal of housing would reduce a sorely needed resource and thus could result in a significant adverse impact.

Other Impacts

Other social impacts relate to parking and traffic, noise, and visual/aesthetic considerations. These impacts are not discussed here because they are analyzed in depth in other Background Report Chapters (see Traffic and Parking Chapter (No. 16) and Noise Chapter (No. 17)). However, it should be noted here that nuisance type impacts such as increased noise and traffic could be expected to reduce the attractiveness of the area as a place to work or live, and affect neighborhood stability and livability.

Mitigation Measures

The most effective means of reducing the various negative impacts upon the environs social environment are design measures. Many such measures have been incorporated into the project; these include buffering the detention facility from the surrounding

land uses by parking lots, spatial separation, the use of extensive landscaping, etc. Additionally, the facility has been designed to minimize the awareness of its presence. This will be accomplished by its low profile building design which will minimize the traditional jail appearance. Such design features will minimize impacts upon the area's "small town" character, reduce the number of views dominated by the facility, reduce the impact of the psychological presence of the facility and its inmates, and consequently reduce the likelihood of land use changes and declines in property values. Two court rooms are included in the design so that the parading of prisoners through the streets to and from court is minimized. When it does occur, prisoners will come and go from a point furthest from the residential areas.

The likelihood of escapes will be reduced by the increased security of the new facility. Although the new facility will be larger than the existing facility, the likelihood of escape should be less than it is at present, due to the design features incorporated to ensure effective perimeter security. For instance, inclusion of courtrooms within the facility and provision for the unloading of persons from vehicles within a secure sally port area will reduce the potential for escape. The concern that released persons will disturb persons or property in the project environs could be reduced by changing the current policy of releasing persons in Martinez. The Sheriff could transport some released inmates to their home community rather than releasing them in Martinez.

Reducing the impact that persons visiting inmates will have upon the environs, will be achieved by providing adequate parking for visitors near the facility's visiting area and providing an adequate visitor waiting area. Provision of adequate parking will alleviate the need for visitors to park in neighboring commercial and residential areas and walk through these areas to the facility. If excessive loitering and intrusion by strangers becomes a serious problem, the County could utilize security guards to reduce the problem during periods of heavy visitation.

Mitigation measures to reduce the social impacts resulting from adverse visual, economic, noise, and transportation impacts are discussed in the chapters which deal directly with these subjects.

Impacts Upon Detention Facility Inmates

Probably the most significant impacts of the project will be those affecting the facility's inmates. Because the new facility represents a significant improvement with respect to the existing facilities, almost all impacts will be beneficial. The following impact analysis compares conditions in the existing main jail with conditions which would result from construction of the proposed facility, and evaluates the impact which changes in conditions will have upon the inmates. In order to focus upon the most important points attention to detail is limited, particularly in describing conditions in the present facility. For a more detailed description of the specific physical characteristics of the proposed facility, refer to the Project Description Chapter (No. 2).

The following discussion, which provides a fairly extensive description of inmate impacts, focuses on four general areas: intake and release, general living environment,

inmate safety, and inmate programs and services. Conditions in the present facility are discussed first, followed by a description of conditions in the new facility and the resulting impacts upon the inmates. The impact upon the inmates of locating a single facility in Martinez is discussed in the Project Alternatives Chapter (No. 6).

Intake and Release

In the present facility, the intake and release processes are confusing, demeaning to the inmates, and less than sufficiently secure for both inmates and staff. Presently, intake and release are carried out in the same area, which results in opportunity for passing contraband, reduced security, and excessive confusion. Another problem is that there is no separate intake area for female prisoners. They are currently brought into the facility through the male booking area or through the public reception area, in either case a demeaning experience.

During the intake process, individuals awaiting incarceration must change into jail clothing in a small passageway in full view of anyone who is in the area at the time. In many instances, during booking, a new inmate is held temporarily in a holding cell with other inmates until he is transferred to a permanent cell. Presently, jail staff has limited observation into the cells from the outside, resulting in the opportunity for assault by other prisoners without the knowledge of jail staff.

Intake and release procedures in the proposed facility will be less confusing, less demeaning, and more secure than those in the present facility and will result in enhanced safety and less pressure and strain for the inmates and staff. The intake area will include a comfortable waiting lounge for all inmates except those proving particularly troublesome.

The new facility will have separate intake and release areas and a separate intake area for women, which will eliminate the present confusion and security problems, and the demeaning nature of the intake process. The new facility will also have a separate and private "dress-in" area, which will make the "dress-in" procedure less unpleasant for the inmates. Not only will the new inmate's clothing be stored, but it will also be dry cleaned and deloused to prevent contamination by other persons' clothing and to insure that the detainee has clean clothing upon release.

Temporary holding facilities designed to hold inmates after booking and before assignment to a residential unit are provided by the lounge in the intake area and by a "quick turnover" housing cluster with 36 single occupancy rooms. An intake feature of the proposed facility not presently provided in the existing facility is the provision of medical screening during booking and the availability of medical housing and expanded medical services within the facility. These medical procedures will result in improved health care for inmates and a more healthful living environment.

General Living Environment

The present detention facilities provide inmates with a living environment which is inadequate according to present state and Federal minimum jail standards; living quarters are overcrowded, not sufficiently secure, and lacking in privacy and personal space. The present main jail is consistently overcrowded. Although its rated capacity (by the State Board of Corrections) is 104, it has an average daily population of approximately 160, and occasional peak occupancy levels of 180 or more. Overcrowding and lack of personal space and privacy detract considerably from the facility's living environment and can make life in jail quite stressful.

Because of its continually crowded state and its internal design, the present facility does not provide for adequate prisoner segregation. Minimum State Jail Standards require the ability to separate males and females, adults and juveniles, sentenced and unsentenced prisoners, and felons and misdemeanants. Good jail administration also requires separation of certain other individuals such as aggressive, or submissive persons, for their own safety and the safety of others. Presently, the only type of segregation which the main jail is able to consistently maintain is the male/female separation. By not providing adequate inmate segregation, the present facility is unable to insure inmate safety. The safety of prisoners is also affected by the structural inadequacy of the present facility, which satisfies neither fire nor earthquake standards.

Additionally, the present facility is noisy and dark, has inadequate space for recreation or other programs, provides only one shower facility per 30 inmates, and is not air conditioned, except in the administrative area.

The new facility will provide a greatly improved living environment in virtually every respect. It will provide an environment more akin to a normal living environment in American society. Consequently, the facility will reduce the severity of the impacts upon the inmates which result from a radical change in living environment. Such traditional features of jail environments as long dark corridors and the use of bars are eliminated. By providing sufficient capacity it will eliminate problems which presently result from overcrowding, and should ensure a less tense and hostile living environment. In addition, by its use of smaller modules with small day rooms and eating facilities, and freedom of movement within the modules, it will encourage constructive inmate-staff relationships by providing contact between smaller inmate groups and staff members on a continuing basis. Its small scale living situation should also foster improved relations among the inmates.

The new facility will be considerably more spacious than the present facility. Cell space will be increased from approximately 15 square feet per person (if not overcrowded) to 70 square feet per person, and day room space will be expanded from less than 10 square feet per inmate to 25. The provision of adequate space, the installation of smaller dayrooms and eating facilities, and the use of single occupancy cells with central cluster areas should better satisfy each inmate's need for personal space and privacy while also providing contact with others.

Other improvements provided by the new facility include windows which are uncovered (but non-opening) and thus provide visibility to the outside world, adequate showers (one for every 8 inmates), and a reduction in noise levels resulting from lower density living, improved design, and better insulation. In addition, the new facility will be well ventilated, and have complete climate control, in order to ensure a comfortable living environment.

Inmate Safety

Because of its continually crowded state and its internal design, the present facility does not provide for adequate prisoner safety. It does not have the ability to adequately separate felons from misdemeanants, and aggressive or submissive persons from the other inmates - for their own safety and the safety of others. Consequently, the present facility is unable to insure inmate safety. The safety of prisoners is also affected by the structural inadequacy of the present facility. It does not satisfy fire code requirements and its ability to withstand a substantial earthquake is questionable.

Inmate safety will be enhanced by the provision of adequate segregation in the new facility. The use of single cells along with adequate capacity ensure that all necessary segregation requirements can be met at the cell level; the installation of small dayrooms provides the opportunity for significant segregation in these areas as well. Additionally, the new facility will satisfy all building and fire code requirements, thus reducing potential danger to inmates.

Inmate Services and Programs

The present detention facility is inadequate in its provision of many basic inmate services such as recreation and counseling, visiting, libraries, medical and dining facilities. Space for programs is limited, and consequently programs are limited.

There are no libraries in the present main jail, and medical facilities are very limited. There are no facilities to allow for separation of ill inmates from other inmates, and a paramedic is available only during normal working hours.

The present facility's visiting space and programs are not sufficiently adequate to satisfy the needs of the inmates. Visiting by family and friends is currently limited to a few hours on Sunday afternoons, and there are only 8 spaces available for visitors. Visiting by lawyers, clergy, and bailbondsmen is limited by the presence of only 3 visiting booths. Limitations on time and space mean that visits are infrequent, short, and often inconvenient for those visiting. Under such circumstances, visits are frequently neither relaxed nor comfortable.

The proposed facility will provide significantly expanded opportunities for programs and services which will benefit inmates. The new facility provides separate exercise areas for each housing cluster. This will enable the staff to program considerably more time for recreational activity, thus providing opportunities for adequate physical exercise and reducing the monotony and boredom of jail life. The new facility will also have a library, which will contain legal and reference volumes. Popular general works will be kept in each housing module. There will be one classroom, as well as combination chapel/classroom, both of which can be used

for various classes, group counseling sessions, service organization meetings (with inmates), etc. There will also be two counseling rooms available for tutoring, counseling, and other activities. With these facilities available, there will be a significant expansion in the number of classes and special programs made available. The library will provide opportunities for legal research.

The proposed facility will have an infirmary with individual medical housing for 26 inmates, and much more extensive equipment and supplies than the present main jail. Services of a paramedic will be available 24 hours a day. Consequently, the availability of medical services for sick inmates will be significantly enhanced, and there will be facilities for separation of sick persons from other inmates, thus reducing the potential for spreading contagious diseases.

The new facility will be equipped with significantly expanded visitor areas, with more privacy provided. Visiting will take place at the individual clusters, with 17 open-contact and 21 non-contact visiting rooms provided. Opportunities for visiting by family and friends will be greatly expanded; the Sheriff's Office expects to be able to allow visiting at almost any time. Visiting facilities for lawyers, bailbondsmen, clergy, etc., will also be improved, facilitating interaction between these persons and the inmates. By improving and expanding visiting opportunities, the new facility will increase opportunities for contact between inmates and the outside world, making life in prison less isolated and reducing the feeling of being completely cut off from friends and family.

Another positive feature will be the inclusion of court rooms in the facility. This will significantly limit the present demeaning situation of parading prisoners through the streets in chains to and from court.

Impacts Upon Detention Facility Staff

The preceding Inmate Impacts section provided an extensive discussion of the living conditions in the existing facility. Factors causing an undesirable living environment also have a deteriorating influence upon a facility's working environment. Presently, working conditions in the Main Jail are poor because of such factors as overcrowding, noise, poor lighting, poor ventilation, and lack of air conditioning. The existing facility also causes security problems for staff because of such factors as lack of opportunity to segregate potentially disruptive or destructive prisoners and the necessity of providing intake and release in the same area. Other negative features of the present facility include inadequate office and kitchen facilities for staff working in these areas, inadequate space and facilities for persons who teach classes and provide group counseling, and limited visiting booths (3 total) for visiting attorneys, bailbondsmen, etc.

The new facility will provide a significantly improved work environment for both full and parttime staff and those who operate programs through or in the facility, such as teachers, counselors, probation officers, attorneys, and bailbondsmen. The new facility will have sufficient capacity to eliminate overcrowding, will be more spacious, climate controlled, adequately lighted, and will have uncovered windows. Kitchen and office space and equipment will be considerably improved, 4 rooms and additional equipment will be provided for classes and counseling,

and the number of visiting rooms will be expanded to 38, and made more spacious and private.

In most regards, the new facility will provide a safer working environment. Separate intake and release areas will be provided, the facility will provide for segregation of potentially disruptive inmates, communication between staff members and inmates will be improved through contact within the housing modules, and the facility will incorporate modern security devices. Also, prisoner movement will be reduced, and the improved environment of the facility is expected to reduce inmate tensions, and thus reduce disturbances.

The greatly improved work environment of the proposed facility should result in greater staff efficiency and morale. Both the improved environment and the use of small modular units comprised of cells, day rooms, and dining areas should result in improved inmate-staff relationships. Working with smaller groups should make it easier for staff members to develop constructive relationships with prisoners, and perhaps to provide some beneficial counseling and guidance. Such opportunities should enhance job satisfaction considerably. The improvements in staff working conditions are likely to reduce job stress, improve mental outlooks, and increase stability of employment.

One aspect of the new facility, the residential unit design, represents a potential security risk to staff. Housing modules are comprised of 48 single rooms (some modules have a smaller number of rooms) with a common dayroom and an exercise area. The modules are secure units (escape is not possible), with freedom of movement allowed to inmates within the modules. Each module will be supervised by an unarmed Deputy Sheriff, who will mix freely with the inmates. The purpose of this arrangement is to provide for constructive contact between inmates and staff. However, there is concern about security of the staff person assigned to work alone among 48 inmates. This type of arrangement has worked well in certain federal facilities in the country (e.g., San Diego), but the specific design planned for the project has not yet been used in a county detention facility (which houses a different cross-section of inmates than does a federal facility).

Mitigation Measures

A number of mitigation measures to enhance staff security are included in project plans. Before inmates are transferred to housing modules in which they are allowed freedom of movement, they will be screened and detained in the "quick turnover" housing area until it is determined that they will not pose a high risk to the guards in the housing modules. Inmates who appear to be potential troublemakers will be detained in special housing areas where they will not be free to move outside of their rooms. In case serious problems arise within the housing modules, each deputy working in a standard housing cluster will be provided with an alarm device which will be carried on his person, and which can be readily activated to call for help.

Impacts Upon Visitors

The present main jail facility is inadequate for visiting in almost all respects.

The public reception area is a very small passageway, without chairs, benches, or restrooms. In addition, most female inmates are transported through the area during intake. Space is so limited that visitors are often forced to wait outside. Actual visiting spaces are inadequate and cramped, and privacy during visits is limited. There are only eight visiting spaces for friends and relatives and 3 booths for lawyers, bailbondsmen, and clergy. In addition, visiting hours for friends and relatives are currently limited to a few hours on Sunday afternoon. The shortage of visiting spaces and booths and the time restriction upon visits from relatives and friends frequently results in visits being rushed and unnecessarily brief.

The proposed detention facility will have significantly improved visitation facilities and scheduling. There will be parking spaces reserved specifically for visitors, and much larger and improved visiting areas. Visiting areas will be provided in each residential cluster, with 17 open contact (100 square feet each) and 21 non-contact (60 or 80 square feet each) visiting rooms provided. The amount of space provided and the design will ensure greater privacy during visits, provide a more comfortable and relaxed visiting atmosphere, and facilitate the provision of inmate services by attorneys, bailbondsmen, etc.

The improved visiting facilities will provide the opportunity to expand visiting hours. The Sheriff's Office presently anticipates being able to allow visiting at almost any time once the new facility is opened. This will greatly expand opportunities for visiting, as well as make visiting much more convenient. People will be able to visit when it is convenient for them rather than being confined to a few hours on a single day each week. It will also enable people to visit for longer periods of time and not feel rushed.

Again, adverse impacts are those related to other potential alternative projects. The main concern with respect to visitors involves the inconvenience to visitors of constructing a single facility located in Martinez. This matter is discussed in the Project Alternatives Chapter (No. 6).

Chapter 22

PROJECT ECONOMICS

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Planning Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	22-1
ECONOMIC DESCRIPTION OF THE PROJECT	22-2
Construction Costs	22-2
Furnishing and Equipment Cost	22-2
Operating Expenses	22-2
ECONOMIC SETTING OF THE PROJECT	22-5
Contra Costa County	22-5
City of Martinez	22-9
County Government Financing	22-14
ECONOMIC IMPACTS OF THE PROJECT	22-19
Introduction	22-19
Countywide Impacts	22-19
Impacts upon the City of Martinez	22-25
Impacts upon the Facility Environs	22-27
Impacts upon Facility Staff	22-30
Impacts upon Visitors	22-31
Impacts upon Inmates	22-32

ILLUSTRATIONS AND TABLES

TABLES

Table 1: Preliminary Construction Cost Summary	22-3
Table 2: Estimated Staffing Costs, Contra Costa County Detention Facility	22-4
Table 3: Employment Among Major Industry Groups: 1960-1980	22-7
Table 4: Number of Business Establishments: 1970-1980	22-8
Table 5: Number of Employees by Industry Classification: Martinez, 1970	22-10
Table 6: Taxable Sales by Type of Business: Martinez, 1975	22-12
Table 7: Taxable Sales for Selected Jurisdictions: 1975	22-12
Table 8: Established Retail Sales: Central Martinez, 1975	22-13
Table 9: Public Finance and Assessment Data: City of Martinez, Fiscal 1975-1976	22-15
Table 10: Net Assessed Valuation and Tax Rates	22-17
Table 11: Budget Appropriations by Major Functions	22-17



INTRODUCTION

The purpose of this report is to describe and analyze the Contra Costa County Detention Facility's economic setting and to identify its economic impacts. The focus of the report is upon such general economic characteristics as employment, retail sales, property values, and government financing. Emphasis is placed upon the economic characteristics of the project and the project's influence upon the economic characteristics of the neighborhoods, businesses, and individuals which it will affect. The project, as considered in this report, includes the proposed detention facility building, which contains two courts, and associated parking lot development on the project site. It does not include the courts addition (for four or more courts) which has not been designed at this time and is proposed for construction at a later date.

This report is comprised of three sections. The first provides a brief economic description of the project and details the sources of funding and the costs of the project. The second section provides a description of the project's economic setting, focusing upon the economic characteristics of the areas and groups which will be affected by the project. In the final section, the economic impacts which the project will generate are evaluated and discussed, and methods of reducing the intensity of specific adverse impacts are presented.

ECONOMIC DESCRIPTION OF THE PROJECT

This section provides a summary of the costs of constructing, furnishing, and operating the proposed project.

Construction Costs

Preliminary project cost estimates released by project's construction manager, Turner Construction Company, are detailed in Table 1. Of the total \$20 million budgeted for construction, \$15 million is allocated for direct construction expenses. Forty percent of this \$15 million will be spent for labor, the remaining 60 percent will be spent on materials.

The \$20 million budgeted for construction of the project includes all funds allocated for construction of the detention/courts building and for parking lot development on the project site. It includes funds allocated for the project architect, programming consultant, construction manager, the diversion of Pine Street, utility relocation and drainage. It does not include funds needed for the provision of additional court facilities at a later date, or funds previously spent for acquisition of the site. Most of the site acquisition occurred as part of the County's general acquisition of civic center property, and consequently funds for this purpose were not taken from the detention facility project budget. However, four properties, valued at approximately \$300,000 are being purchased with funds from the project budget.

Furnishing and equipment costs

The above construction cost summary does not account for furnishing and equipment such as tables, desks, bunks, chairs, shelves, kitchen utensils, and library books. The estimated cost of providing such items is:

For detention purposes	\$572,555
For court purposes	\$ 75,000
TOTAL	\$647,555

Operating expenses

Estimates of staffing costs for the new facility developed by the project's programming consultant, Facility Sciences Corporation (FSC), are shown in Table 2. Based upon July 1, 1976 County salary levels, FSC has estimated that it will cost \$2,631,400 per year in salaries and fringe benefits for staff to operate the facility. This figure is more than double the \$1,076,000 which the County budgeted for personnel to operate the existing main and branch jails during Fiscal 1975-1976.

Preliminary estimates of all operating expenses other than personnel expenses have been developed by the Sheriff's Office these estimates, which include all service and supply costs, indicate that operating expenses exclusive of

Table 1

PRELIMINARY CONSTRUCTION COST
SUMMARY

<u>Item</u>	<u>Cost</u>
Excavating and Foundations	\$748,000
Structural Frame and Roofing	1,961,000
Exterior and Interior Wall	788,000
Vertical Transportation	170,000
Fire Protection	223,000
Electricity (including security systems)	1,248,000
Plumbing	1,783,000
HVAC and Building Automation	1,426,000
Sitework and Utilities	596,000
Pine Street Diversion	375,000
Special Requirements (equipment, etc.)	2,701,000
SUBTOTAL - Direct Construction Costs	<u>15,019,000</u>
Other Project Costs (architect, construction manager, soil testing, etc.)	2,913,000
Project Contingency	2,068,000
TOTAL CONSTRUCTION BUDGET	<u>\$20,000,000</u>

Source: Turner Construction Company

Table 2

ESTIMATED STAFFING COSTS*

CONTRA COSTA COUNTY DETENTION FACILITY

Position	Monthly		# Positions	Monthly Total
	Rate Range	Rate Used ¹		
<u>SECURITY STAFF</u> ²				
Shift Supervisor	1472-1790	1,500	5	7,500
All Other Posts	1272-1545	1,350	98.6	133,110
		(SUBTOTAL)	(103.6)	(140,610)
<u>ADMINISTRATIVE SERVICES</u>				
Detention Center Super- intendent	2045-2486	2,200	1	2,200
Deputy Superintendent	1713-2083	1,850	1	1,850
Program Coordinator	1485-1805	1,600	1	1,600
Asst. Program Co- ordinator	1272-1545	1,350	1	1,350
Court Liaison Officer	1485-1805	1,600	1	1,600
Nurse	1240-1367	1,300	5	6,500
Medic	680- 827	750	5	3,750
Alcohol Recovery Staff	1306-1588	1,440	3.2	4,610
Doctor	3702-4307	4,000	.5	2,000
Dentist ³	None	2,890	.3	870
Chef	1881-2076	1,940	1	1,940
Cook	1625-1792	1,700	4	6,800
Clerical Accountant ⁴	800-1100	800	6	4,800
		SUBTOTAL	133.6	39,870
		TOTAL MONTHLY		180,480 ⁵
		TOTAL YEARLY		2,165,760 ⁵

* Based on Suggested Staffing Pattern and on Contra Costa County Civil Service Rates (July 1, 1976) except as indicated.

1. Rough midpoint.
2. Represents November '75 rates plus 8%, actual 76 rates to be negotiated shortly
3. Contra Costa County currently paying 16.80 per hour on part-time basis
4. Requires more definitive job description(s)
5. Does not include fringe benefits. With benefits added, the monthly total is \$219,300; annual total is \$2,631,400, Fringe benefits were added at 21.5%; source: County Auditor's Office.

Source: Facility Sciences Corporation

personnel costs will be approximately \$1,056,000 per year for the proposed facility. This compares with a current non-personnel operating cost of approximately \$708,000 for the main and branch jails.

ECONOMIC SETTING OF THE PROJECT

This section provides a description and analysis of the project's economic environment with emphasis upon the criteria most relevant to an evaluation of the proposed detention facility's economic impacts. There are discussions of the economic environments of Contra Costa County and the City of Martinez, with the Martinez analysis focusing upon the areas most directly affected by the project, the areas surrounding the project site. Also provided is a discussion of County government finances, with particular emphasis upon financing for both the existing and proposed detention facilities.

Contra Costa County

The economy of Contra Costa County is characterized by an economic base focused upon heavy industry and retail trade and services, and a labor force which tends to work in other counties almost as often as in Contra Costa. The county's economy is well integrated within the overall economy of the San Francisco Bay Area, but it plays a specialized role within that regional economy. The degree of the county's economic interdependence is demonstrated by the 1975 Census revelation that 40.7% of working residents of Contra Costa County were employed outside of the county, primarily in Alameda County and San Francisco. While the county functions in part as a bedroom community for the San Francisco and Oakland employment centers, at the same time it is the home of much of the Bay Area's heavy industry, which employs many workers residing in other counties. In 1975, approximately 23,000, or 14.4% of the estimated 161,000 persons employed in the county, were residents of neighboring counties. Heavy industry benefits the county by contributing substantially to the tax base, but at the same time the county's reliance upon capital intensive heavy industry which provides comparatively few jobs relative to investment has helped to foster the county's low level of employment opportunities.

An historical examination of the county's economy is helpful in understanding its present structure. Virtually all of the county's growth in heavy industry, such as oil refineries, steel mills, and chemical plants, took place in the first half of this century. Since 1950, the county's heavy industrial base has remained relatively stable in terms of firms and employment. However, during the past 25 years there has been rapid population growth in the central and southern portions of the county. Most of this growth is directly a result of suburban expansion of the San Francisco-Oakland metropolitan area, and a high proportion of those moving into the suburban areas are employed in San Francisco or Alameda County.

During this period of suburbanization, the number of industrial jobs remained relatively stable, in the 25,000 to 30,000 range (see Table 3). Most of the county's increase in jobs during this period resulted from a growth in service employment. For example, between 1960 and 1970, the number of jobs in retail trade, services, government and public education increased by 80%; this increase accounted for 84.4% of the total growth in county employment in the decade. Manufacturing employment increased by a mere 1% during the decade, and its share of total county employment actually declined. Recent countywide trends indicate that the concentration of growth in retail trade, services, and government employment is likely to continue, but not necessarily to the exclusion of growth in light and heavy industry. However, it suggests a maintenance of or perhaps an increase in the county's level economic dependence upon employment opportunities existing in other areas.

Economic dependence, at least concerning employment, is reflected in a statistic which measures the number of jobs in an area per 1000 residents. In 1970, Contra Costa County had 265.5 jobs per 1000 residents. Among the 5 counties of the San Francisco-Oakland Standard Metropolitan Statistical Area (SMSA), only Marin had a lower rate; its rate was 264.5, only one point lower. Figures for the other counties in the SMSA were: San Mateo, 379.8; Alameda, 428.3; and San Francisco, 742.4.

As has been true throughout the State, the economic recession of the mid-1970's has had a significant impact in Contra Costa County. One impact of the recession has been an increase in the rate of unemployment. Although the county's unemployment rate declined somewhat during 1976, in October 1976 the State Employment Development Department estimated the County's unadjusted unemployment rate at 10.4%.

The recession of the mid-1970's also had a major impact upon the county's building industry. Building was strong in the late 1960's and the early 1970's, but there was a significant decline in activity in the 1972-1974 period. Building permit data indicate that there has been an increase in activity since 1974, particularly since the latter part of 1975. Most of this upsurge in activity has resulted from a resurgence in the construction of single family homes. Multiple residential, commercial and industrial construction has yet to show significant signs of recovery from the recession. One impact of the building slump has been a significant increase in unemployment among construction workers, a contributing factor in the county's high unemployment rate. An indication of the number of county residents who work in the building trades is provided by the 1970 Census, which indicated that 17,573 county residents (8.3% of all employed residents) were employed as construction craftsmen or laborers in 1970.

Further information regarding the county's economic situation is provided by information concerning personal income, taxable sales, and the rate of inflation. In recent years, Contra Costa has been ranked as one of the wealthiest counties in California as measured by personal income. For example, the 1975 California Statistical Abstract ranked Contra Costa highest among

Table 3

EMPLOYMENT AMONG MAJOR INDUSTRY GROUPS:1960-1980
CONTRA COSTA COUNTY

Industry Group	Number Employed				Percentage Distribution			
	1960	1970	1975(est)	1980 ¹	1960	1970	1975(est)	1980 ¹
Agriculture	2,900	3,216	2,900	2,750	2.8	2.2	1.8	1.6
Mining	300	187	300	300	0.3	0.1	0.2	0.2
Construction	10,800	10,794	11,012	11,532	10.4	7.3	6.9	6.7
Manufacturing	28,600	28,818	25,480	26,000	27.7	19.5	15.9	15.2
Transportation	6,900	8,976	8,990 ²	9,650	6.7	6.1	5.6	5.6
Wholesale	2,800	4,514	6,270	7,130	2.7	3.1	3.9	4.2
Retail	16,700	27,093	30,850	33,160	16.2	18.4	19.2	19.3
Finance/Insurance	2,600	5,496 ¹	6,300	6,980	2.5	3.7	3.9	4.1
Services	16,600	27,556	30,700	33,000	16.0	18.7	19.1	19.2
Government and Unclassified	15,200	31,174 ³	37,970	41,000	14.7	21.0	23.6	23.9
TOTALS	103,400	147,615	160,772	171,502	100.0%	100.0%	100.0%	100.0%

¹ Projections based on "medium" population growth expectations.

² Beginning with the 1975 employment estimate, railroad employment is included with Government and Unclassified Employment. This reflects the formation of the government-owned AMTRAK.

³ Differences in methods of allocating noncovered employment account for a major portion of the 1960 to 1970 increase in Nonclassifiable Employment.

Sources: 1960 Data: Estimate by California Department of Human Resources;
1970 Data: Contra Costa County Planning Department LUTS Inventory Component 5-4;
1975 and 1980 Data: Projections by the Contra Costa County Planning Department based on the earlier published material cited.

Table 4

NUMBER OF BUSINESS ESTABLISHMENTS: 1970-1980
CONTRA COSTA COUNTY

Industry Group	Establishments			Percent Distribution		
	1970	1975 (est)	1980*	1970	1975 (est)	1980*
Agriculture	432	421	422	2.0	1.9	1.8
Mining	17	16	16	0.1	0.1	0.1
Construction	1,350	1,354	1,395	6.4	6.3	6.1
Manufacturing	613	644	696	2.9	3.0	3.1
Transportation	491	502	530	2.3	2.3	2.3
Wholesale	508	517	541	2.4	2.4	2.4
Retail	3,564	3,664	3,870	16.8	16.9	17.0
Finance/Insurance	1,099	1,155	1,234	5.2	5.3	5.4
Services	9,803	9,952	10,384	46.3	46.0	45.7
Government	674	701	748	3.2	3.2	3.3
Other	2,622	2,725	2,909	12.4	12.6	12.8
TOTALS	21,173	21,651	22,745	100.0%	100.0%	100.0%

*Projections based on "medium" population growth expectations.

- Note: Number of business establishments counts each unit of a business firm separately, i.e., a firm with 10 stores in Contra Costa County would be counted as 10 establishments.

Sources: Contra Costa Land Use and Planning Study, Technical Memorandum Number 8, October, 1974.

all California counties in median income based upon 1973 income tax returns. Another countywide economic indicator is the level of taxable sales. In 1975, countywide taxable sales were \$1.823 billion, or \$3,128 per county resident.

The rate of inflation, particularly for the construction industry, is very relevant to this project. Although there have been periods of rapid inflation in the construction industry in recent years, the current rate of inflation is comparatively low. The project's construction manager, Turner Construction Company, estimates that the construction cost escalation factor will be approximately 3/4% per month during final planning and construction phases of the project.

City of Martinez

The economy of Martinez is quite different from the county norm. While Contra Costa County is a commuter oriented county, with considerably fewer jobs than employed residents, Martinez is an employment center, with more jobs than employed residents. According to data provided in the EIR for the 1975 "Detention Center" proposal there were 7,020 jobs and 6,234 employed residents in the Martinez area in 1970.¹ This and most of the other distinctive economic characteristics of Martinez relate primarily to the older, northern area of the city, which is situated north of Highway 4. It is this area of Martinez which this discussion will focus upon, because it encompasses the project site and will be the area most directly and strongly impacted by the project.

Martinez has historically been an employment center and an industrial city. The Shell Oil Refinery is the largest industrial firm in the area, and Martinez is the home of Contra Costa County government. In recent years, as Martinez has grown, the economic importance of industry and commerce has lessened, and a growing county government has become a more important component of the city's economy. County government is a major source of employment and a significant stimulator of local retail activity.

Since 1960, the population of the City of Martinez has increased by 95%, from 9,604 to 18,702 in 1975. Virtually all of this growth has occurred in the southern part of the city, an area which is suburban in character, commuter oriented, and physically and socially quite unlike the older, northern part of the town. As Martinez has expanded its residential development to the south, transportation links with central county have improved, and Martinez has become more integrated into the economy of central county. This trend, along with the growth of retail businesses along Alhambra Avenue and the bypass of Martinez by Interstate 680, has helped to contribute to a decline of retail activity in the Martinez Central Business District (CBD). The extensive development of new retail centers in central county has also contributed to this decline.

Table 5 details the number of jobs by type of industry in both the northern Martinez area and the entire city for 1970. The data indicate that the Martinez

¹ County of Contra Costa, Draft Environmental Impact Report, Contra Costa County, California, Criminal Justice Detention Facility, January 1975, pp. 117 and 118.

Table 5

NUMBER OF EMPLOYEES BY INDUSTRY CLASSIFICATION:
MARTINEZ, 1970

Industry Classification	Number of Jobs ¹			
	Northern Martinez		City of Martinez	
	Number	Percent	Number	Percent
Agriculture	0	0%	9	0.2%
Mineral Extraction	0	0	0	0
Construction	75	1.6	233	4.5
Manufacturing	400	7.8	400	5.8
Transport./Communications/Utilities	285	5.8	368	5.3
Wholesale Trade	0	0	11	0.3
Retail Trade	521	10.3	593	8.4
Finance/Insurance/Real Estate	150	3.0	168	2.5
Services	835	16.3	1,176	16.8
Government and Education	2,794	54.5	3,817	54.4
Non Classifiable	31	0.7	128	1.8
Total	5,126	100.0%	7,020	100.0%

¹ Includes census tracts 3160, 3170, and 3180; this essentially comprises the incorporated area of Martinez north of Highway 4.

Source: Contra Costa County Land Use and Transportation Study; Contra Costa County Planning Department

employment situation is dominated by governmental employment. Over half of the jobs in the entire city are in government and education, and most of these are County government jobs. The data also reveal that employment is heavily concentrated in northern Martinez. Most of the government jobs (73%) as well as the majority of all jobs (also 73%) are in the northern part of the city. The majority of the non-government employment in northern Martinez is in retail trade and services, much of which serves the government employees.

Data available from the State Employment Development Department indicate that the unemployment rate in northern Martinez is higher than the countywide rate. In October 1976, according to data from the State Employment Development Department, the unemployment rate in the three census tracts which comprise northern Martinez was 13.4%; the countywide rate was 10.4%.

Retail Business Activity

Because the project will have a significant impact upon retail sales in Martinez, it is important to discuss the city's retail business situation. The level of retail sales activity in Martinez is now quite low. In 1975, retail establishments in Martinez accounted for \$30,359,000 in taxable transactions, a level representing \$1,623 for each Martinez resident. This figure for taxable sales per resident is barely half the countywide rate of \$3,128 per resident, and is significantly lower than the rates of \$3,843 and \$4,155 in neighboring Concord and Pleasant Hill.

The low level of retail sales citywide is reflected in the retail activity of the central business district, the retail area which will be most strongly impacted by the project. The Central Martinez General Plan Revision Analysis which was completed in 1973 noted that over the past decade the strength and diversity of the CBD has declined significantly.² This decline occurred in spite of rapid population growth in southern, suburban Martinez and a growth in county employment within the downtown area. Perhaps the single most significant cause of the decline has been the growth of the major regional shopping center in the Sun Valley area in Concord, which has drawn away some of the retail activity of the CBD.

To estimate the current retail strength of the Martinez CBD, the County Planning Department inventoried the CBD's retail establishments by type, and determined what proportion of the city's total establishments were located in the CBD for each type of establishment. The proportions were then applied to citywide taxable sales for each type of establishment to estimate total retail sales for the CBD. The results, which are shown in Table 8, indicate that the CBD accounts for approximately half of the city's taxable retail sales. Excluding service stations, the CBD's estimated taxable retail sales for 1975 was \$11,234,000.

² ABT and Associates and Duncan and Jones, General Plan Revision Report for Central Martinez, May, 1973.

Table 6

TAXABLE SALES BY TYPE OF BUSINESS
CITY OF MARTINEZ, 1975

TYPE OF BUSINESS	PERMITS	TAXABLE SALES ¹
Retail Stores		
Apparel Stores	7	623
General Merchandise Stores	3	---
Drug Stores	5	---
Food Stores	7	3,355
Packaged Liquor Stores	5	1,029
Eating & Drinking Places	31	3,227
Home Furnishing & Appliances	4	848
Building Material & Farm Implements	4	363
Auto Dealers & Auto Supplies	7	3,411
Service Stations	22	8,244
Other Retail Stores	16	2,799
Retail Stores Totals	111	23,899
All Other Outlets	187	6,460
Totals All Outlets	298	30,359

¹ In Thousands of Dollars

Source: California State Board of Equalization

Table 7

TAXABLE SALES FOR SELECTED JURISDICTIONS: 1975

JURISDICTION	¹ TAXABLE SALES : 1975	TAXABLE SALES PER CAPITA
Contra Costa County	\$1,823,174	\$3,128
Martinez	\$ 30,359	\$1,623
Concord	\$ 363,795	\$3,843
Pleasant Hill	\$ 105,527	\$4,155

¹ In Thousands of Dollars

Source: California State Board of Equalization

Table 8

ESTABLISHED RETAIL SALES
1
CENTRAL MARTINEZ , 1975

TYPE OF BUSINESS	NUMBER OF ESTABLISHMENTS	TAXABLE TRANSACTIONS (in Thousands of Dollars)
Apparel Stores	8	\$ 623
General Merchandise Stores	1	292
Drug Stores	2	954
Food Stores	3	1,434
Packaged Liquor Stores	2	411
Eating & Drinking Places	17	1,770
Home Furnishing & Appliances	3	636
Building Materials	5	363
Auto Dealers & Supplies	4	1,949
Service Stations	3	1,124
Other Retail Stores	20	2,799
Total Retail Sales	68	\$12,358
Total Excluding Service Stations	65	\$11,234

1. Area bounded by Pine Street, Mellus Street, Berellessa Street and Southern Pacific Railroad

Source: State Board of Equalization, Contra Costa County Planning Department

For the purposes of this report, it is important to estimate the impact which County employee spending has on the CBD. This issue was examined in depth during the environmental review process for the County's 1975 "Detention Center." At that time, the County's Planning Economist estimated that County employees spent an average of \$12,50 per week on goods and services in the central Martinez business district.³ Updating this figure by accounting for inflation yields a current estimated expenditure of \$14.00 per employee per week. This represents a yearly expenditure by County employees in the CBD of \$1,237,600, or 11% of total CBD sales.

Assessed Valuation

In Fiscal Year 1975-1976, the City of Martinez had a gross assessed valuation of \$80,606,571. This represents a gross assessed value per capita of \$4,310, which is 13.8% lower than the countywide per capita figure of \$4,905. This assessment figure does not account for the reappraisal of Martinez which was conducted in the first half of 1976. The reappraisal, which resulted in a substantial increase in residential valuation, will be reflected in Fiscal 1976-1977 assessed valuation.

County Government Financing

To comprehend the economic environment of the proposed detention facility project requires an understanding of County government financing and budget considerations relating to the project. Construction of a new detention facility will require the expenditure of a very large sum of public money, approximately \$20,000,000. This expenditure is essentially a one time expense. Any increase in jail operating expenses resulting from the new facility will have to be funded out of the County's annual operating budget.

County revenues are derived from a variety of sources. The two largest sources are property taxes and aid from other governmental agencies, which primarily involves funds derived from the state and federal governments. Budgeted County revenues for Fiscal Year 1975-1976 are detailed below:

³ County of Contra Costa, Response Document and Second Appendix, Contra Costa County, California, Criminal Justice Detention Facility, April, 1975, pp. III-52, III-53.

Table 9

PUBLIC FINANCE AND ASSESSMENT DATA
CITY OF MARTINEZ, FISCAL YEAR 1975-1976

COMPONENT	TAX RATES ¹	
	LOW	HIGH
County	\$ 2.849	\$ 2.849
City	\$ 1.870	\$ 1.870
School	\$ 3.546	\$ 6.002
Special Districts	\$ 2.112	\$ 2.583
TOTAL	\$10.377	\$13.304
¹ per \$100 Assessed Valuation		

JURISDICTION	ASSESSED VALUATION	
	GROSS ASSESSED VALUE	GROSS ASSESSED VALUE PER CAPITA
Contra Costa County	\$2,859,056,639	\$ 4,905
Martinez	\$ 80,606,570	\$ 4,310

Source: Contra Costa County Tax Collector's Office
Contra Costa County Assessor's Office

Source	1975-1976 Revenue	Percent of Total
Aid from Other Governmental Agencies	\$ 96,508,421	46.7%
Property Taxes	69,516,576	33.6
Charges for Current Services	23,418,082	11.3
Taxes Other than Current Property	4,877,000	2.4
Use of Money and Property	3,794,000	1.8
Fines, Forfeits, and Penalties	1,751,000	0.9
Licenses and Permits	1,640,618	0.8
Other Revenue	548,675	0.3
Balance from Previous Years	4,584,620	2.2
Total	\$206,638,992	100.0%

Source: 1975-1976 Contra Costa County Final Budgets

The largest source of County government revenue (46.7% in Fiscal 1975-1976) is aid from other governmental agencies, primarily the state and federal governments. The bulk of the locally derived revenue comes from property taxes. The level of funding which must be raised from property taxes is determined after the budget needs of all County departments and the amount of revenue available from non-property tax sources is ascertained. The difference between the budget needs and the non-property tax revenue available must be made up by property taxes. Once property tax requirements are determined, the tax rate for County taxes is set, based upon the amount of money required and the assessed valuation of the tax base. The resulting County tax rate represents only the County portion of the total tax bill each property owner must pay; other components may include city, school district, and special district tax rates. In Fiscal 1975-1976, the County tax rate (the portion of the total tax rate which is intended for County government purposes) was \$2.849 per \$100 assessed valuation.

The tax rate is applied to all taxable properties within the county. As an example of the magnitude of the County tax rate, the owner of a home valued at \$50,000 (assessed valuation, which is 25% of market value, is \$12,500) paid \$306.27 for the County's portion of his property tax bill in Fiscal 1975-1976. His total property tax bill would have been in the vicinity of \$1350, depending upon the specific city, school district, etc., in which he resided.

Table 11 details County budget appropriations by major functions for Fiscal 1975-1976. This budget summary includes only those expenditure appropriations for which funding must be obtained during the fiscal year. As of June 30, 1975, there was a \$37,174,652 fund balance from previous years. Of this balance, \$29,246,617 was reserved for encumbrances. Funds for the new detention facility were included among the funds reserved for encumbrances in the fiscal 1975-1976 budget.

Table 10

NET ASSESSED VALUATION AND TAX RATES:
CONTRA COSTA COUNTY, FISCAL 1966/1967 - FISCAL 1975/1976

<u>Fiscal Year</u>	<u>Net Assessed Valuation (After Deduction of Exemptions)</u>	<u>Increase in Assessed Valuation</u>	<u>Total Tax Rate</u>
1975-1976	\$2,496,322,084	\$300,110,212	\$2.849
1974-1975	2,196,211,872	250,755,742	2.770
1973-1974	1,945,456,130	76,924,746	2.830
1972-1973	1,868,541,384	119,640,325	2.833
1971-1972	1,748,901,059	84,293,265	3.204
1970-1971	1,664,607,794	73,199,626	2.970
1969-1970	1,588,408,168	23,196,058	2.592
1968-1969	1,565,212,110	97,028,950	2.327
1967-1968	2,468,183,160	123,645,215	2.269
1966-1967	1,344,537,945	129,551,585	\$2.300

Source: Contra Costa County Final Budgets

Table 11

BUDGET APPROPRIATIONS BY MAJOR FUNCTIONS:
CONTRA COSTA COUNTY, FISCAL 1975/1976

<u>Function</u>	<u>Final Budget 1975-1976</u>	<u>Percent of 1975-1976 Final Budget</u>
Public Assistance	\$ 91,949,731	44.5
Public Protection	38,273,277	18.5
Health and Sanitation	33,520,710	16.2
Public Ways and Facilities	16,082,740	7.8
General and Administrative	15,745,650	7.6
Plant Acquisition	1,783,911	0.9
Education, Debt Service and Other	5,407,769	2.6
Reserves	3,875,204	1.9
Total	\$206,638,992	100.0

Source: 1975-1976 Contra Costa County Final Budgets

In Fiscal 1975-1976, \$20.3 million were reserved for the detention facility project. Of this total, \$14.8 million was derived from federal revenue sharing, and the remaining \$5.5 million was in the accumulated capital outlay fund. Accumulated capital outlay funding was raised through a property tax levy of \$.05 per \$100 of assessed valuation during Fiscal 1970-1971, and another \$.10 per \$10 during the following two fiscal years. This revenue was raised specifically to help finance the construction of a new detention facility. Of the \$5.6 million raised for the outlay fund, \$180,000 was spent during Fiscal 1972-1973 for detention facility planning purposes. The funding currently reserved for the project was originally budgeted in fiscal years 1973-1974 and 1974-1975; \$14.3 million was budgeted in 1973-1974 and \$7.7 million was budgeted in 1974-1975. These two figures sum to more than the \$20.3 million available in 1975-1976 because some of the money has been spent on research and planning activities.

It is important to note that although the County effectively has \$20 million banked and reserved for the detention facility, any interest which that money earns will not necessarily be added to the project's funds. Interest earnings accrue to the County General Fund rather than to any specific project. Consequently, interest earned on the revenue reserved for the project's construction will accrue to the accumulated capital outlay and federal revenue sharing funds, and will not be available for the detention facility unless it is specifically assigned to the detention facility at a later date. Since the funds reserved for the detention facility do not earn interest (for themselves), they are particularly sensitive to inflation. Any inflation in the construction industry effectively reduces the buying power of the funds.

ECONOMIC IMPACTS OF THE PROJECT

Introduction

Both construction and operation of the proposed project will generate significant economic impacts. Construction of the facility will require the expenditure of approximately \$20 million over a three year period. Approximately \$500,000 was spent during the first year; the balance will be spent during the following two years. In addition, operation of the new facility will be considerably more costly than operation of the present facility.

The intent of this section is to identify and evaluate the project's economic impacts, and to present methods of mitigating or reducing the intensity of adverse impacts. Emphasis is placed upon the project's influences upon the economic environment of people affected by the project. Attention is focused upon such economic factors as retail sales, expenditures for salaries and materials, property values and employment. This report attempts to identify all significant human impacts of an economic nature.

The presentation of impacts is organized according to the areas or economic groups affected. Discussion begins with the largest group impacted, the total county, and gradually narrows to the groups living and working in the facility. Impact assessments are presented for the following groups: (1) Total County (2) City of Martinez, (3) Facility Environs, (4) Facility Staff, (5) Facility Visitors, and (6) Facility Inmates.

Countywide Impacts

Because of the magnitude of the project and the fact that it provides for the detention needs of the entire county, the proposed detention facility will generate countywide impacts. The expenditure of \$20 million dollars of public money will stimulate the county's economy and provide employment for some county residents. Operation of the facility once it is opened will provide additional employment and increased spending for supplies and services. Additionally, the expenditure of \$20 million and the increase in operational expenses will cause a significant impact upon County government financing. The following discussion of countywide impacts focuses upon (a) the project's tendency to stimulate the county's economy, (b) the project's impact upon county government financing, (c) other resulting economic impacts, and (d) mitigation measures.

(a) Stimulation of the County's Economy

The project will stimulate the county's economy in the short term through the expenditure of funds for labor and materials, and in the long term through increased expenditures for facility operation. However, it should be noted that the increase in expenditures for facility operation may also have a depressing effect upon the county's economy, by causing a raise in taxes for county residents

(see following Section - Impacts Upon County Government Financing - for further discussion). Economic stimulation will result from the creation of additional employment opportunities, the purchase of goods and materials, and the purchases which persons hired to work in constructing or operating the facility will make locally.

The construction manager, Turner Construction Company, has estimated that during most of the 23 month construction period an average of 70 construction workers will be employed daily. The exception to this pattern will be a 4 to 6 month period of intensive activity when an average of 150 persons will be working daily. This high intensity period will begin 2 to 3 months after the initiation of construction. Because there will be a need for people with different skills during different stages of the project, most workers will not be employed for the project's full duration. The average length of employment is expected to be 6 months. Given these expectations, approximately 350 people will be employed for an average of 6 months each. Given the county's high unemployment rate (10.4% in October 1976) and the particularly high unemployment rate among construction workers (nationwide rate was 19.1% in October 1976; no local statistics are available), the number of job opportunities which the project will generate represents a significant positive benefit to the county.

It is not possible to determine what percentage of the construction jobs will be made available to county residents, nor is it possible to ensure that a certain proportion will be provided to county residents. The construction manager, Turner Construction Company, will manage and coordinate construction activities. The actual construction work will be done by subcontractors, who will be hired by the County. The County must let bids for each subcontract and by law must hire the lowest responsible bidder who meets all the County's requirements. If the lowest bidder is not selected, a written justification explaining why that bidder was rejected must be made. The County legally cannot require that any of the subcontractors be based in any particular area, such as Contra Costa County. Consequently, the subcontractors who are hired to construct the project will not necessarily be local contractors. However, subcontractors from out of the area can be expected to hire some local workers, since it is customary for non-local contractors to send only a core staff of primarily supervisory and management personnel from their home office and to hire additional personnel locally. Given this expectation, it can be assumed that many of the construction workers hired will be county residents; but it is not possible to accurately predict the number.

Since some of the persons employed during project construction will be county residents, it is expected that a significant portion of their earnings will be spent within the county on housing, goods, and services. This spending will provide a direct stimulus to county retailers and to the county's economy in general.

Fully 60% of the construction budget, or \$9.2 million, will be spent on materials and furnishing for the facility. Some of the necessary material cannot be purchased within the county, given the quantities necessary for this project. Nevertheless, the County Public Works Department expects that approximately two-thirds of the \$9.2 million will be spent within the county, providing substantial stimulus to county wholesalers and the overall county economy. The increase in business volume resulting from the project will result in a slight increase in the number of jobs available in the county, since certain merchants may have to hire more employees to handle increases in volume.

Long-term stimulation of the county's economy will result from the increased cost of operating the new detention facility. However this stimulation may be counter-balanced to some extent by the depressing effect of a tax increase, as taxes are raised to pay for increased operating costs (see following Impacts Upon County Government Finance Section for a further discussion). Estimates made by the project's programming consultant, Facility Sciences Corporation, indicate that personnel costs for operation of the new facility will be more than double present levels. Based upon the consultant's estimates, operation of the facility will result in an increase of approximately 70 new full time county positions. This will benefit the county's economy by providing additional employment opportunities for county residents.

It is also expected that other operating costs, such as the cost of supplies and services, will be greater for the new facility (see following section). This will result in increased County expenditures for supplies and services, which will provide a stimulus to the county's economy. It will also increase the operating costs of County government, and thus is likely to result in a tax increase.

(b) Impacts Upon County Government Financing

The project will generate a number of impacts upon County government financing. These include a loss of tax base, increased detention facility operating costs, and lost opportunity costs.

- Loss of Tax Base

A loss of tax base will occur because properties which the County has purchased or will purchase in order to create a site for the facility will be removed from the tax rolls once they become County property. The County does not pay property tax on properties which it owns. The loss of tax base resulting from the construction of the facility will be minimized because the County already owned most of the site prior to the decision to locate the detention facility there. The County has been purchasing properties in the site area in recent years in order to obtain ownership of land within the boundaries of the County Civic Center as designated in the 1963 Civic Center Plan. At the time the decision to construct the facility on the civic center site was made only four properties within the site were privately owned (see Chapter 2 for a more extensive discussion). These included two doctor's offices, a boarding house, and a

single family residence. The County has appraised these properties at the following values:

Doctor's Offices	\$ 76,000
Doctor's Office	110,000
Boarding House	51,000
Single Family Residence	<u>50,000</u>
TOTAL	\$287,000

Since County appraisals have been exceeding actual assessments, \$287,000 (assessed value = \$95,700) represents the probable maximum loss in tax base which will result directly from construction of the detention facility. This loss will affect not only County government, but also all the other agencies (the City of Martinez, school districts, etc.) which derive revenue from taxes on these properties.

- Increased Detention Facility Operating Costs

Although increases in operational expenditures for the proposed detention facility will stimulate the economy, they will be based on the adverse effect of increasing the expenditures of County government. The new facility will cost substantially more than the existing facility to operate, and this increase must be paid out of the County budget. An estimate of the magnitude of this increase can be obtained from an analysis of the current operating costs of the main and branch jails and the projected operating costs of the proposed facility. It is important to note that estimates of the project's operating costs are based on a capacity occupancy of 383 inmates, whereas estimates of current costs are based upon current occupancy levels (e.g., an average of 251.8 inmates were incarcerated per day in the last 3 months of 1976).

Facility Sciences Corporation has estimated that the proposed facility will require about 134 staff members at a yearly cost of \$2,631,400.⁴ Current annual staff expenses for the main and branch jails are \$1,076,000, yielding a difference of \$1,555,000. On a per inmate basis, the project's estimated yearly personnel costs are \$6,887, while those of the current facilities are \$4,274. Thus, the project is expected to cost 61% more per inmate for personnel. It should be noted that this increase will occur gradually, although there will be a significant increase at the time the new facility begins operation. Increasing inmate population is expected to continue causing increases in staffing costs for the existing facilities, until the proposed facility begins operation. When the proposed facility begins operations, it is not expected to be filled to capacity. Staffing

⁴Facility Sciences Corporation, Contra Costa County Detention Facility Service Program, December 10, 1976, p. VIII-6.

costs are thus expected to be somewhat less than \$2.6 million until the facility approaches capacity occupancy levels.⁵

To finance operational cost increases, the County would have to transfer funds from other projects or increase property tax revenues through the tax rate. Although the project will not be operable until 1979, it is illustrative to assess the impact of a \$1 million tax increase upon the County's current tax base. It should be noted that by 1979, the tax base will be greater than it is presently. Raising an additional \$1 million based upon the Countywide 1975-1976 net assessed valuation of \$2,496,322,084 would require an increase in the tax rate of \$0.04. A \$0.04 increase in the tax rate would result in a \$4.30 increase in the yearly property tax bill of a \$50,000 owner-occupied home.

- Lost Opportunity Costs

Another concern resulting from the proposed project is that the expenditure of \$20 million of County funds means that the opportunity to spend the money for other projects has been lost. In addition, the County's reserves will be reduced by \$20 million. Consequently, other projects that might have been funded with the \$20 million will have to either be funded from other sources or not undertaken.

- Other Impacts

One concern about the cost of the project is that other alternative proposals which satisfy the County's detention needs are potentially more directly economically advantageous to the County. This issue is considered in the Project Alternatives Chapter (No. 6), which evaluates alternatives to the proposed project. The concern is that other alternatives might result in lower land, construction, or operating costs.

An additional consideration is that construction of the proposed project might lead to subsequent studies and projects which will require additional funding to undertake. This concern arises because the proposed project and its associated parking development will occupy virtually all remaining vacant County Civic Center property, thus depriving the County of most of its expansion potential in the civic center. Consequently, the County may decide in the near future to plan for final civic center development and determine how future needs for office space and parking might best be met. Also, inmate capacity projections indicate that the County will need to provide additional detention capacity during the 1985-1990 period (see Inmate Capacity Chapter, No. 5). The County has begun planning to meet those needs.

⁵For comparison purposes, the project's staffing level of 134 (for 383 inmates) is only slightly greater than the staffing level of 117 proposed for the previous 1975 County "Detention Center" project (capacity of 343). On a per inmate basis, the project calls for 0.349 staff per inmate; the "Detention Center" called for 0.341 staff per inmate.

Another impact upon County government financing involves the need to relocate County government operations presently located within the project site. These operations include the Office of Economic Opportunity, the Sheriff's training component, the Health Planning Office, and the Community Gardens Project. Since these organizations presently occupy County-owned buildings, their relocation will result in additional expenses to the County as office space is either rented or purchased elsewhere. Their relocation will also disrupt operations of the organizations involved, and both inconvenience and increase transportation costs for workers who are transferred to new offices further from their homes. Present plans (1/4/77) are to relocate all operations except Community Gardens elsewhere in Martinez, and to locate Community Gardens in Pleasant Hill near the Central Library.

(c) Other Countywide Impacts

In addition to the direct stimulation of the economy, the project will produce other less tangible economic benefits to the county. The use of revenue-sharing funds for a capital project of long range usefulness represents a beneficial expenditure of these funds. Also some of the funds which are intended for the detention facility were raised from county tax revenues. Use of this taxpayer's money for a necessary project represents a reasonable, if not otherwise preferred use of these funds.

Additionally, the project will provide the economic value of an increment in service. This means that the project will result in an economic benefit to society simply by virtue of its existence and operation, particularly when compared with the level of service currently provided by the existing facilities. The proposed facility will provide a major service to society, and this service has a significant economic value even though the value is not directly manifested through the marketplace or the transfer of funds. Since the service provided by the proposed facility will be of considerably greater value than that provided by the present facilities, the increase in the value of service provided represents perhaps the greatest increment in service ever provided by a County project.

Another impact relates to the bolstering of the economy of the City of Martinez by U. S. and County taxpayers. Although the project provides an economic advantage to Martinez, it can be viewed as a disadvantage to other county communities which would benefit economically if the project were constructed in their area. Instead these communities are subsidizing through their taxes a project which benefits the City of Martinez, although this is a secondary impact and not the intent of the project. However, it should be noted that many communities would not want the project to be located within their boundaries despite the economic benefits.

(d) Mitigating Measures

A means of minimizing all adverse impacts which are directly related to the cost of the project would be to begin construction as soon as possible. Given

the rate of inflation in the construction industry the sooner the facility is constructed the less it will cost. In order to minimize delay in constructing the project, construction will be phased. This means that rather than letting bids for the entire project at one time, bids will be let in stages. Consequently, work on the initial phases (e.g., site work) can begin as soon as possible, even if the construction manager is not ready to let bids on later phases of the project at that time. Another step which the County has taken to reduce the cost of the proposed facility was to reduce the number of courtrooms from 4 to 2.

Impacts Upon the City of Martinez

The impacts upon the City of Martinez are discussed in two sections: this one, which focuses primarily upon broad citywide impacts, and the following section which deals with the impacts that the project will have upon its immediate environs. Inevitably there is overlap between the two; in instances where overlap occurs the discussion of the specific impact is presented in one section and referenced in the other. It was felt necessary to discuss these two areas separately in order to provide sufficient attention to the impacts upon the project's immediate environs.

The following discussion of the project's economic impacts upon the City of Martinez focuses upon (a) impacts resulting from project construction and operation, (b) impacts affecting primarily the civic center and central business district (CBD), (c) impacts which result from selection of the project site, and (d) measures which could be instituted to mitigate any adverse impacts.

(a) Impacts Resulting from Project Construction and Operation

As discussed in the countywide impacts section, construction of the project will result in the expenditure of approximately \$6.1 million for labor and \$9.2 million for materials. Much of this money is expected to be paid directly to the county work force and merchants. Since the project will be located in Martinez, some of the workers hired are likely to be residents of Martinez and surrounding central county communities.

The provision of employment opportunities for Martinez residents and the purchase of materials from Martinez merchants will stimulate the city's economy. Additional stimulation will result from construction worker expenditures in the city, and from increased detention facility operational expenditures. Since construction worker expenditures will accrue primarily to the central business district this issue is discussed in detail in the following project environs section. Increases in detention facility operation expenses will provide more local jobs, result in increased expenditures for materials and furnishings, generate more County employee spending in the central business district, and generally provide a positive economic impact upon the City of Martinez.

(b) Direct Impacts Upon the Civic Center and Central Business District Area

The project will have direct impacts upon Martinez's central area, particularly

upon the County Civic Center and the central business district (CBD). These impacts include the short range protection and enhancement of the CBD, as well as the limiting of the long range possibilities for the central area. These impacts are discussed in the following section which concentrate on the impacts upon the facility's environs.

(c) Impacts Which Result from Selection of the Project Site

The selection of the specific civic center site for the proposed facility will result in both beneficial and adverse impacts upon the City of Martinez. It will increase public (i.e., County government) investment and employment in Martinez, and help ensure that a large segment of County government remains in Martinez. The construction of this major County project represents a commitment on the part of County government to both continue and increase its presence in downtown Martinez.

The selection of the civic center site minimizes some of the adverse impacts of the project. It minimizes the short-run impacts upon the city due to losses in property tax revenue. Such losses will result from the loss of tax base which occurs when residential and commercial properties are removed from the tax rolls upon purchase by the County. Since the project site is comprised primarily of property previously owned by County government, the loss of tax base resulting from removal of properties from the tax rolls is minimized. Another concern regarding loss of tax base is that the project will cause a decline in the value of properties surrounding the project site. Although this concern is expressed by some persons, it is also possible that the project, by adding a new building and landscaping to a presently disordered project site, will increase the attractiveness of the surrounding area and thus result in a rise in property values. The selection of the project site minimizes the likelihood of a reduction in property values because the project is included as part of the civic center area, for which plans were developed in the early 1960's. Also, the addition of the facility to the existing complex, which presently includes a detention facility, is expected to have less of an impact than would introduction of the facility into an area where such uses are not now located.

Adverse impacts resulting from selection of the project site include the actual and potential loss of tax base, the possibility of a decline in neighborhood property values, and the threat of a change in land use. A direct loss of tax base will result from removal of the four privately owned properties located within the project site. The County has appraised these properties at \$287,000. If the properties were assessed at their appraised values, the loss in tax revenue for the Martinez City government would be \$1,248 during Fiscal 1976-1977. Losses for future years could be expected to parallel this figure and increase as property values in the area rise. The potential for a decline in property values and changes in land use in the areas surrounding the project site is discussed in the following project environs section. Any resulting decline in property values would result in a drop in tax revenue for the City of Martinez.

(d) Mitigating Measures

Since most of the adverse impacts upon the city are those which will specifically impact the project environs, a full discussion of mitigating measures is presented in the following project environs section.

Impacts Upon the Facility Environs

The following discussion focuses on the economic impacts upon the area immediately surrounding the project site. The primary districts affected will be the County Civic Center, the central business district (CBD), and the residential areas surrounding the project site. The discussion of impacts examines (a) economic impacts resulting from construction and operation expenditures, (b) impacts upon Civic Center and CBD development, (c) impacts upon the surrounding residential areas, and (d) mitigating measures which might be instituted to reduce or eliminate the adverse impacts.

(a) Impacts Resulting from Construction and Operation Expenditures

Construction of the project will result in the expenditure of approximately \$6.1 million for labor and \$9.2 million for material and furnishing. Some of the jobs generated as a result of project construction may be taken by residents of the project environs, and some of the material and furnishing purchases will be made from environs merchants. Additionally, the environs might benefit from the rental or purchase of dwelling units by persons hired to work on the project.

Construction workers hired for the project are expected to spend a portion of their earnings in the Martinez Central Business District (CBD). To estimate the proportion of earnings likely to be spent in the Martinez CBD by construction workers, it is assumed that they will spend approximately the same amount as County government employees. Since the wages of construction workers will be somewhat higher than those of County government employees, this seems to be a reasonable assumption. Based on determinations of County employee spending patterns (\$14 per week in the CBD), the construction employees can be expected to spend approximately \$4,300 per month during most of the 23 month construction period and \$8,800 per month during the 4-6 month period of peak construction activity.

As previously noted, operation of the new facility will provide economic benefits through an increase in material and furnishing purchases and the creation of approximately 70 new permanent jobs. A portion of the material and furnishings can be expected to be purchased from environs merchants. Also, the additional full time employees can be expected to spend a portion of their wages in the CBD. If their expenditure habits parallel those of present County employees, the additional 70 employees can be expected to spend approximately \$50,960 per year in the CBD for goods and services.

Another stimulus to the CBD economy will result from increased visiting once the facility is operational. Construction of the new detention facility is expected to result in a significant increase in the number of inmate visits made

by families, friends, and advisors. One reason for this expected increase is that when the new facility is completed more prisoners will be incarcerated in Martinez as a result of the transfer of some branch jail inmates and most of those inmates currently detained in other counties to the new facility. A major factor expected to contribute to increased visiting is the expansion of opportunities for visiting provided in the new facility. The new facility will provide more visiting space, and the Sheriff intends to expand visiting hours substantially.

Although it is difficult to assess the magnitude of the economic impact the visitors will have, it is reasonable to assume that visitors will spend some money on goods and services in Martinez, primarily in the CBD. An increase in visitation will result in an increase in visitor spending, and a positive economic impact on Martinez and the CBD.

(b) Impacts Upon Civic Center and Central Business District (CBD) Development

The construction of a major facility such as the proposed detention and courts complex (which will occupy approximately 88,000 square feet of ground area and a 6 square block site) will have a significant impact upon future Civic Center and CBD development. By deciding to construct the facility in the Civic Center, the County confirms its commitment to continuing to focus its operations in the Civic Center area. This allays some concerns that County government might immediately begin to locate its major operations and facilities outside of the Civic Center, and reduces uncertainty over Civic Center development. The affirmation of County government's commitment to the Civic Center and the construction of a major facility will also enhance the business potential of the CBD.

The construction of the detention facility precludes the use of much of the site for other purposes. It is possible that if the facility were not constructed other functions providing greater economic benefits to the area might be constructed on the site, but probably not in the near future. The construction of County government office buildings is an example of an alternative use with potentially greater long term economic benefit to the facility environs. Such a project would not generate the potential adverse psychological impacts which a detention facility might.

(c) Impacts Upon the Surrounding Residential Area

When the previous "Detention Center" proposal was being reviewed, residents of the neighborhood bordering the project site and Martinez City officials expressed concern that the project would result in a significant deterioration of overall neighborhood quality.⁶ They felt that this would result in a decline in property values for many of the residences affected. However, while County

⁶County of Contra Costa, Draft Environmental Impact Report, Contra Costa County, California, Criminal Justice Detention Facility, January, 1975, pp. 195, 196.

staff acknowledged the potential for decline, they also noted that it was uncertain that significant adverse impacts would be realized, and that there was a strong potential that benefits would result.

Although the present project represents a significant departure from the previous proposal, and many of its adverse characteristics have been modified, the potential for the project to cause a decline in neighborhood quality and a concomitant decline in property values still exists in a diminished capacity. Factors with the potential to contribute to such a decline include: (1) construction noise, traffic, and other attendant annoyances resulting from construction activity, (2) an increase in traffic flow once the new facility is opened, (3) the general sense of aversion many persons feel toward a jail, (4) the blockage or partial blockage of views from certain homes, (5) the intrusion of a large facility into a small scale residential neighborhood, and (6) the closure of 3 streets.

It can be argued that those who reside near the Civic Center currently live in an area which contains a jail, and that the replacement of one jail with another will have little additional impact. However, the new facility will be considerably larger, both in physical size and projected average occupancy, than the present facility which is buffered from residential areas by intervening County buildings and parking lots which surround it. The proposed facility will also be buffered (by parking lots and landscaping), but because of its size and location its physical presence will be considerably greater than that of the present facility. Consequently, it is reasonable to assume that the project will cause a considerably greater impact than that which presently results from the existing jail. In addition, the impact will occur in a slightly different area. (A discussion of the project's impacts upon the environs social environment is included in Chapter 21).

In many instances in which a project with an unfavorable image impacts a residential area, the anticipated effect upon property values tends to be overestimated because of emotional factors. However, it is possible that the property values of both those residences nearest to the project and those homes which may have their views significantly affected will either decline or at least increase at a slower rate than would have occurred had the project not been constructed. Because of the location and relatively low height of the project, significant impacts upon the visual environment have been substantially reduced (see Project Description Visual Analysis Chapters, No. 2 and No. 20). In addition, other residences less directly affected but still close enough to the project to be influenced by its presence might be mildly impacted.

On the other hand, some residences might actually experience a rise in property values, because of the decrease in uncertainty over civic center development and the transformation of a disordered project site into a more orderly and

⁷ Ibid., p. 196; County of Contra Costa, Response Document and Second Appendix, Contra Costa County, California, Criminal Justice Detention Facility, April, 1975, pp. III-49, III-50.

well-landscaped state. It is possible that the project will induce a demand for multiple family residential, office or commercial uses in the surrounding area, which would result in the likelihood of a rise in property values for some surrounding residences. However, such an occurrence, if it does materialize, will affect only a limited portion of the surrounding residences. The remainder would still face the possibility of a negative impact upon property values. An evaluation of the project's potential to induce a change in land use in surrounding neighborhoods is included in the Land Use Chapter (No. 18). The conclusion is that substantial land use changes are not likely to result from construction of the detention facility.

Another concern is that persons occupying residences and offices which will be removed by the project will be forced to pay more for housing or office space elsewhere. This impact would result from the high rates of interest which purchasers of properties must currently pay, and the high rate of housing and office inflation in recent years and its varying impact upon different areas. Additionally, there is the possibility that the moving of a doctor's office to another location could have an adverse impact upon his business. It is also likely to inconvenience and possibly cause financial hardship for patients who would be forced to travel further to visit their doctor. The persons who will be dislocated because of facility construction include two doctors, the occupants of a single family home, and the residents and owners of a boarding house.

(d) Mitigating Measures

Adverse impacts upon the facility environs could be reduced through a number of measures. Measures already included in present plans include construction of a low profile facility which does not present a traditional jail-like appearance nor block views, substantial landscaping, location of the facility so that impact upon surrounding neighborhoods is minimized, and buffering the facility from residential areas with parking lots. Noise, traffic, dust, and other impacts resulting from construction could be minimized by taking special precautions during the construction of the project. In fact, the decision to construct a low rise facility will result in significant noise reduction (when compared to a high rise structure) because it will not be necessary to drive piles for the foundation.

The people whose homes or offices are located within the project site, and who will be forced to relocate will be compensated by the County. By law, the County must pay the owners fair market value for their property, provide financial assistance for relocation, and assist people in finding housing or office space elsewhere if so requested. This will reduce the adverse economic impacts upon those forced to relocate.

Impacts Upon Facility Staff

The primary economic impact of the project upon facility staff will be the creation of more staff positions. Approximately 70 new positions will be created to provide sufficient staff to operate the new facility. Although these

70 new positions are based on occupancy levels at or near peak capacity, it is expected that most will be filled when the facility begins operation. This will occur because many of the new positions are required simply because the design of the facility will necessitate more intensive staffing. In addition, at the time the facility opens occupancy is expected to be close to design capacity thus ensuring that most of the new positions will be filled at that time.

Enlarging the staff may benefit present staff members by providing an increase in the number of positions with higher job classifications, thus providing opportunities for promotions. A benefit of selecting the Martinez site is that present Main Jail staff will not be forced to relocate or drive further distances to work as a result of constructing the new facility. However, persons presently working at the Branch Jail who will be transferred to Martinez may be adversely affected. A conceivable adverse impact of selecting the Martinez site is that there may be alternative sites which are more accessible to staff which might have been chosen.

Mitigating Measures

A means of reducing the adverse impacts upon Branch Jail staff who would be transferred to Martinez when the new facility begins operation would be to provide opportunities for staff to be transferred to other positions at Marsh Creek instead.

Impacts Upon Visitors

Economic impacts upon visitors relate primarily to project location. A more accessible location decreases the cost and increases the convenience of traveling to visit the facility, and a less accessible location results in greater transportation costs and inconvenience. When compared with other possible locations, the Martinez civic center site exhibits some advantages and some disadvantages. It is a reasonably central location within the county, is near the intersection of the county's major east-west and north-south transportation routes (Highways 680 and 4), and is a convenient location for many central county visitors. It is also served by public transportation; a BART feeder bus serves central Martinez from the Concord BART station. Unfortunately, that is the only public transportation link which serves the facility, and because of difficult connections and the infrequency of service access from most parts of the county by public transport is poor. Also, neither BART nor the bus now operates on Saturday or Sunday.

Location of the detention facility in Martinez is less convenient for visitors from east and west county than a facility located in those areas would be.

⁸Facility Sciences Corporation projects a peak daily population for 1980 of 335; this is 87% of the facility's design capacity.

This is a particular concern with regard to west county, because approximately 54% of county resident inmates currently come from west county. At the same time the facility is favorably located for many central county visitors and better serves east county visitors than would a west county facility.

A positive impact of the project upon visitors will be a significant expansion of visiting hours and visiting opportunities (number of visiting booths, etc.), when compared with the present situation.

Impacts Upon Inmates

The project will benefit inmates by providing increases in services and programs which have an economic value to them. These will include educational programs, vocational training and counseling, substantial law library facilities, etc.

Chapter 23

CRIMINAL JUSTICE FACILITIES

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

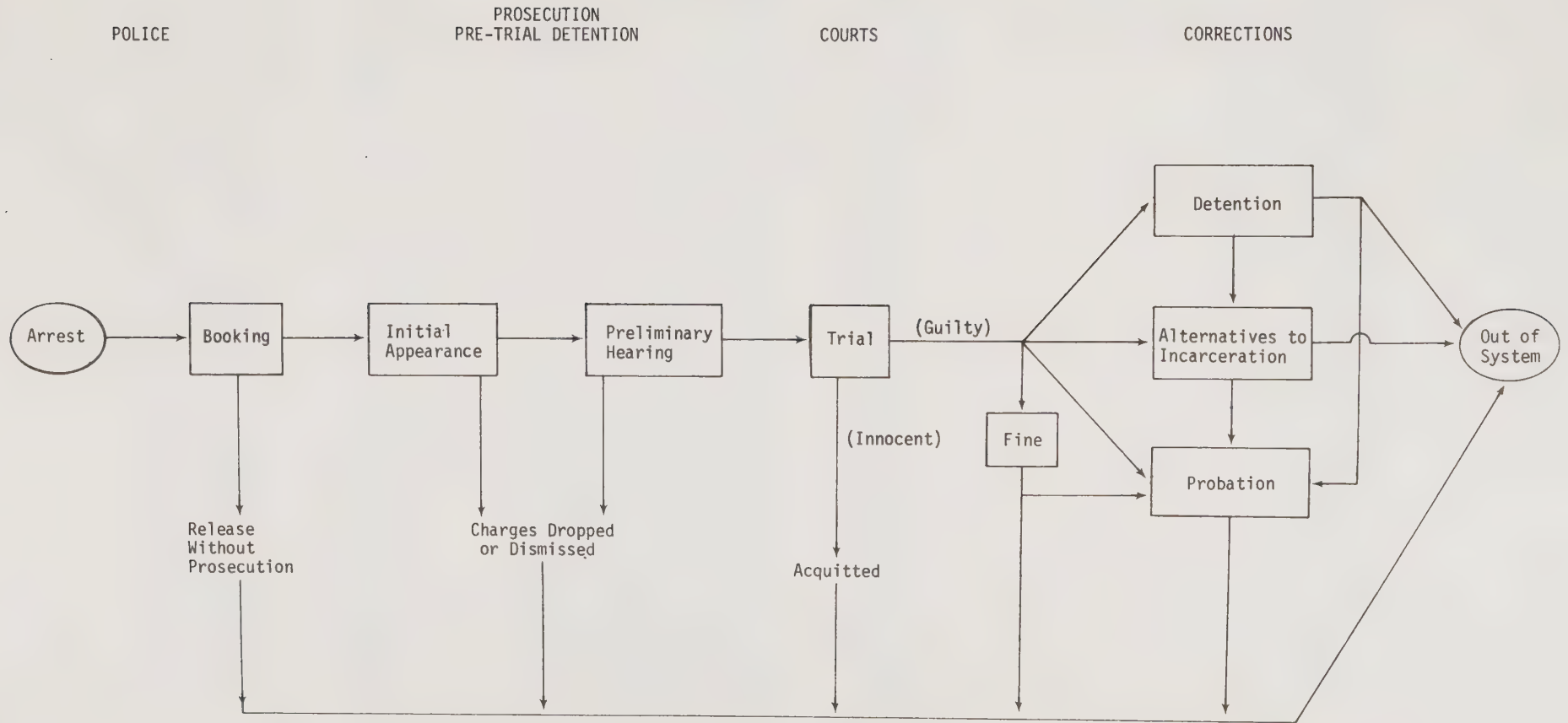
Contra Costa County Planning Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	23-1
CRIMINAL JUSTICE FACILITIES	23-1
Police	23-3
Detention Facilities	23-5
Courts	23-10
District Attorney	23-12
Public Defender	23-13
Probation	23-13
Community Service and Support Facilities	23-14
IMPACTS OF THE PROJECT	23-16
Impacts Upon Police	23-16
Impacts Upon Detention Facilities	23-16
Impacts Upon Courts	23-19
Impacts Upon District Attorney	23-20
Impacts Upon Public Defender	23-21
Impacts Upon Probation	23-21
Impacts Upon Community Service and Support Facilities	23-21
ILLUSTRATIONS AND TABLES	
FIGURES	
Figure 1: Overview of the Criminal Justice System	23-2
TABLES	
Table 1: Police Services in Contra Costa County, 1971	23-4
Table 2: Booking, Handling, and Transporting Prisoners in Contra Costa County, 1971	23-6
Table 3: Detention Facilities in Contra Costa County, Types I, II and III	23-8
Table 4: Criminal Justice System Facilities	23-22
Table 5: Summary of Criminal Justice Facilities	23-24

Figure 1

OVERVIEW OF THE CRIMINAL JUSTICE SYSTEM



Police

An individual's first contact with the criminal justice system is initiated by the police fulfilling their function of enforcing criminal law and maintaining public order. Individuals generally enter the system as a result of arrest by a police officer. When an arrest has been made, the police are responsible for the suspected offender from the time of arrest until the initial court appearance, or until the person is delivered into the custody of the Sheriff at the County Jail.

At the local level police functions are provided by the County, twelve cities, the Kensington Community Service District, the East Bay Regional Park District, Bay Area Rapid Transit (BART) District, and the State Highway Patrol. The County Sheriff's Department provides police service to the unincorporated area and under contract to the cities of Lafayette and Moraga. Hercules contracts with City of Pinole for police services. Each of these agencies provides one or more of the following services: (a) crime repression and prevention, (b) criminal investigation, (c) specialized field patrol activities, (d) police communications, (e) records and information, (f) prisoner booking, handling, and transportation, (g) recruiting and training of police personnel, (h) planning and research, and (i) community relations.

The various cities provide a variety of resources necessary to carry out their police functions. Such resources include staff, vehicles, communications, supplies, equipment and facilities. The extent and quality of such support varies widely throughout the county as shown in Table 1, which details the personnel, vehicles, and usable space available to county police agencies in 1971.¹ In order to provide police services, in 1971, these agencies were provided a total of 799 sworn and 263.4 civilian personnel, 355 vehicles, \$19,810,262 in expenditures and a total of 110,602 square feet of usable floor space.

Nine of the county's municipalities maintain detention facilities or temporary holding cells (see next section). Five deliver their offenders directly to the County's main jail; these are: Clayton, Lafayette, Martinez, Moraga, and Pleasant Hill. In addition the California Highway Patrol, the East Bay Regional Park District and Kensington Community Services District book offenders directly into the main jail. Under California Law (Section 4015 P.C.) the Sheriff must accept such referrals.

¹ The source of this information is the Final Report on the Police Services Study, Contra Costa County, prepared by Booz-Allen and Hamilton in January, 1973. Although this report utilizes 1971 data, it is the most recent comprehensive police study available for the county. Its now dated statistics do not effect this chapter's evaluations.

Table 1

POLICE SERVICES IN CONTRA COSTA COUNTY, 1971

AGENCY	PERSONNEL		VEHICLES	Usable Space (Sq. Ft.)
	Sworn	Civilian		
Antioch	36	12	12	6,100
Brentwood	6	0.5	12	462
Clayton	3	0	2	400
Concord	92	38	48	8,844
El Cerrito	36	10	13	4,190
Kensington	8	0	3	1,480
Martinez	25	8	10	4,071
Pinole ¹	17	4.5	6	1,327
Pittsburg	28	7	10	4,244
Pleasant Hill	30	11	16	4,525
Richmond	156	52	74	44,400
San Pablo	36	6	13	4,000
Walnut Creek	59	23.4	36	6,690
Sheriff's Dept.	267	91	110	19,869
TOTAL	799	263.4	355	110,602

¹ Also serves City of Hercules.

Source: Booze, Allen, & Hamilton, Final Report on the Police Services Study
Contra Costa County (January 31, 1973)

In 1971, local police transported a total of 25,997 persons between booking facilities, detention facilities, and court facilities (see Table 2). The number transported ranged from a high of 3,878 for the City of Concord to a low of 26 for the Kensington Service District. The County Sheriff's Department transported 14,816 persons. While there are no data regarding the number of person-mile or vehicle-miles traveled while transporting that many persons, requirements for prisoner transportation include travel from 1) place of arrest to booking facility, 2) initial detention facility to court for arraignment, 3) court, (after arraignment), to county jail, and 4) county detention facility to court during pre-trial, trial, post-trial periods.

The Booze, Allen and Hamilton study estimated that in 1971, the total cost of transporting prisoners for all county jurisdictions was \$300,987 (including labor and vehicle costs). They also indicated that the total cost for booking, detaining, and transporting prisoners was \$768,582 of a total \$19,810,262 expended for all police services within Contra Costa County.

For cities with their own detention facilities, the time necessary to handle these bookings was estimated to be 1 hour per offender booked. An additional 30 minutes each was required of police from those jurisdictions booking prisoners directly into the county jail. Of the 11,816 prisoners transported to the county jail by the cities and Kensington Service District, 7,191 or 64% originated in three cities; Concord (3,878), Richmond (2,193) and San Pablo (1,120). The mileages between these cities and Martinez are: Concord, 8; Richmond, 24; and San Pablo, 21.

Detention Facilities

After a person is arrested, he or she is generally transported by the arresting officer to a detention facility, where he is booked and detained until trial, pre-trial release, release without prosecution, or transfer to another detention facility. Within the county there are a variety of detention facilities which serve a wide range of needs. The County Sheriff provides for the bulk of the county's detention needs, through two high security facilities for unsentenced persons, a minimum security facility for sentenced inmates, and a work furlough facility. State law has delegated primary responsibility for local detention to the County Sheriff by specifying that he must receive all persons committed to jail by competent authority.² In addition to the county facilities, a number of cities maintain temporary holding facilities in which they detain persons for a short period of time (less than 48 hours), until they are released or transferred to county facilities. Although not directly part of the local detention system, the state prison also serves the county by receiving certain of the county's convicted felons after trial.

²California Penal Code Section 4015.

Table 2

BOOKING, HANDLING, AND TRANSPORTING PRISONERS
IN CONTRA COSTA COUNTY - 1971

<u>Police Agency</u>	<u>Total Bookings</u>	<u>Persons Detained</u>	<u>Persons Transported</u>
Antioch	826	549	330
Brentwood	135	90	214
Clayton	11	0	126
Concord	5,340	3,544	3,878
El Cerrito	1,420	944	982
Kensington	18	0	26
Martinez	686	0	474
Pinole	225	0	260
Pittsburg	1,483	986	627
Pleasant Hill	517	0	723
Richmond	6,299	4,186	2,193
San Pablo	1,504	999	1,120
Walnut Creek	826	549	228
Subtotal	19,290	11,852	11,181
Sheriff's Dept.	11,243	4,526	14,816
TOTAL ALL	30,533	16,378	25,997

Source: Booz, Allen and Hamilton, Final Report on the Police Service Study - Contra Costa County (January 31, 1973).

The detention facility system is a combination of buildings, grounds, staff, operating procedures, and inmates interacting with each other and with other components of the criminal justice system. The detention facility system can best be thought of as a system supporting two functions: (1) the short term housing of persons who are somewhere in the process of adjudication from arrest to the finding of guilt or innocence and cannot otherwise be released, and (2) the longer term housing of persons who have been found guilty and sentenced to a term in detention. While the original purpose of the detention system was the fairly simple removal from society of persons pending trial and sentencing, this purpose has evolved to establish the detention facility system as (1) temporary holding facilities, (2) as a criminal sanction--expected to punish and deter future criminal behavior, and (3) as a behavior modifier--expected to change an inmate's behavior by methods other than punishment.

County Operated Facilities

County operated facilities include the main jail in Martinez, the branch jail and Sheriff's rehabilitation center at Marsh Creek, and the Richmond work furlough center. According to state law, the maximum time which a person may be detained in these facilities is one year. Individuals sentenced to longer terms are sent to the state prison.

The main jail, which is located in the County Civic Center in downtown Martinez, was built in two stages; the portion of the facility presently housing the administrative offices and kitchen was constructed in 1901, and the majority of the prisoner housing was added in 1944. The State Board of Corrections has rated the facility's capacity at 104, but recent occupancy levels have been in the vicinity of 160.³ In the last three months of 1976, the average daily inmate population in the main jail was 164.6, with peak populations rising to 180 or more on occasion. The Board of Corrections has described the main jail as continually overcrowded.⁴

Until January 5, 1977, the main jail had been used primarily to house unsentenced prisoners, with some sentenced prisoners also housed there. However, on that date, the Superior Court ruled that the Contra Costa County Sheriff was in violation of the law which requires that sentenced and unsentenced prisoners be housed separately. To comply with this ruling, the Sheriff transferred all sentenced males housed in the main jail to the branch jail, and devised a means of separating sentenced and unsentenced females by housing most sentenced females in the Richmond work furlough center. In addition, some sentenced females and unsentenced males were transferred to facilities in other counties.

³ California State Board of Corrections, Report on the Inspection of Local Detention Facilities to the California Legislature, March, 1976, p. 42.

⁴ Ibid.

Table 3

DETENTION FACILITIES IN CONTRA COSTA COUNTY
TYPES I, II, AND III

Facility	Date Constructed/ Remodeled	Board Rated Capacity	Average Daily Population, 1975 ¹	Type ²
County Facilities:				
County Jail	1901/1944	104	157	II
Branch Jail	1969	50	48	II
Rehab. Center	1937	161	111	III
City Facilities: ³				
Antioch	1970	4	2	I
Brentwood	1963	2	0.28	I
El Cerrito	1961	11	3	I
Pittsburg	1964	8	2	I
Richmond	1960	56	14	I
San Pablo	1956	5	5	I
TOTAL		401	342.28	

¹Based on a single day sample taken in September.

²Type I facilities can hold people more than 24 hours, but not more than 48 hours (less weekends and holidays). Type II and III facilities can hold persons up to one year.

³In addition to the six cities with Type I facilities, the cities of Concord, Pinole, and Walnut Creek operate temporary holding facilities and transport any prisoner who would otherwise remain over 24 hours to the County jail.

Source: California State Board of Corrections, March, 1976.

Physically, the main jail is three stories high, including a rooftop exercise area. It contains a basement and is made of grey stone blocks (1901 section) and poured concrete (1944 section). The nominal outside dimensions of the building are 127 feet long, 52 feet wide, and 32 feet high.

The branch jail is located next to the Sheriff's rehabilitation center on Marsh Creek Road, approximately 5 miles southeast of the City of Clayton. It is a temporary facility which was converted to medium security use in 1969. It had previously served as a dormitory to house sentenced inmates at the rehabilitation center. The building is segregated from the rehabilitation facilities by a chain-link fence topped with barbed wire. The State Board of Corrections has noted that the branch jail conversion has not worked out satisfactorily,⁵ as there have been periodic prisoner disturbances since it has been occupied.

As a consequence of the Superior Court ruling of January 5, 1977, the branch jail no longer houses both sentenced and unsentenced male prisoners; only sentenced male prisoners are currently housed there. The State Board of Corrections rates the facility's capacity at 50; its average daily population during the last 3 months of 1976 averaged 53.9.

Adjoining the branch jail at Marsh Creek is the Sheriff's rehabilitation center which is a minimum security honor camp housing all sentenced male prisoners except trustees, those detained at the work furlough center, in other counties, or, for security reasons, in the main or branch jails. The center's rated capacity according to the Board of Corrections is 161; average daily population during the final 3 months of 1976 was 106.4.

The work furlough center, located in Richmond, commenced operation in late 1976. Its planned capacity is 75. The purpose of this facility is to provide housing for sentenced male inmates who are released during the day to work or attend school. A similar facility for women is presently being designed. Pending completion of the women's facility, half of the male facility is occupied by sentenced female inmates.

In addition to the above, the county also houses some inmates in facilities in neighboring counties. A significant number of male inmates are housed in the County of San Francisco's San Bruno facility, and some female inmates are housed at Santa Rita in Alameda County. Some inmates are also housed in Solano and Sonoma Counties. In the final 3 months of 1976, an average of 26.5 inmates per day were held in San Bruno.

⁵ Ibid.

City Operated Facilities

Six municipalities within the county (Antioch, Brentwood, El Cerrito, Pittsburg, Richmond, and San Pablo) operate Type I detention facilities, which can hold persons for up to 48 hours. The cities of Concord, Pinole, and Walnut Creek operate temporary holding facilities and transport any prisoner who would remain over 24 hours to the county jail. The remaining cities deliver arrested persons directly to the county's main jail.

Except for the City of Richmond's facility, which has a capacity of 56 (Board of Corrections rating), the city facilities are small. According to the Board of Corrections, most of the facilities are in good condition, well managed, and meet local needs adequately.⁶

Courts

A person who is arrested soon thereafter comes into contact with the court system. Within 48 hours after arrest he is given an initial appearance before a judge (due to flexibility in the system to account for weekends, etc., it occasionally takes longer). At that time the judge briefly examines the case and the evidence which is available, and determines whether to continue the case or dismiss it. If the decision to continue proceedings is made, the individual's next encounter with the courts occurs at the preliminary hearing. This is a more formal presentation of the case than the initial appearance, and both prosecution and defense present material for the judge to review. At this stage, the judge again makes a decision to dismiss the charges or continue the case; if he decides to continue, the person is then scheduled for trial, which may be by judge or jury. Prior to the trial, the charged person is again brought before the judge, for arraignment proceedings. At this time, charges are formalized and a plea is entered.

In the local criminal justice system, the courts have the responsibility of determining whether individuals charged with the violation of the criminal code are innocent or guilty. If found guilty, the court determines appropriate sentencing. There are two classifications of violations: felonies and misdemeanors. Felonies are considered to be serious crimes and may be punishable by sentencing to state prison. Misdemeanors are less serious crimes and if sentenced to jail the offender will be incarcerated in a local detention facility for a comparatively short period of time.

The court system is in frequent contact with and closely interacts with the other components of the criminal justice system. It is the focal point for all components to participate in the determination of guilt or innocence of the offenders and the setting of sentence for those found guilty. Courts are also responsible for the supervision of the total criminal justice system. In their role as supervisors of the system, the courts may require major revisions in the operations of the other components, particularly the police and detention systems.

⁶Ibid, p. 43.

There are two levels of the court system within the county: Superior and Municipal. The Superior Court has jurisdiction over most civil suits involving claims above \$5,000 and all divorce, real property, probate, and felony criminal proceedings. The jurisdiction of the Municipal Court system includes misdemeanor offenses and most civil suits involving claims of less than \$5,000.

The Superior Court is a single court encompassing the entire county. The district is divided into 12 departments, all of which are located in Martinez. In addition there is a branch Superior Court located in Richmond, which is staffed by a single judge from one of the Martinez departments. There is also a Family Law Commissioner, whose office is located in the Court House in Martinez.

The Superior Court has 11 courtrooms in the Martinez Court House, including the one used by the Family Law Commissioner. There is a single courtroom for Superior Court purposes in the County office complex in Richmond. The amount of floor space provided for the Superior Court is 29,050 square feet in the Martinez Court, and approximately 1,850 square feet in Richmond. In fiscal year 1974-1975, the Court recorded a total of 2,876 felony filings, 1,681 of which were originally filed in Municipal Court, and 1,195 in Superior Court.

State Law requires that the Superior Court be located in the county seat unless the Board of Supervisors decrees otherwise. The option to locate Superior Court facilities elsewhere is usually exercised in situations in which population concentrations and distances which people must travel are such that providing branch facilities at locations outside of the County Seat results in increased convenience for defendants, witnesses, attorneys, local police, and others involved in the judicial process. For example, to adequately serve its district, the Superior Court system of Los Angeles County has branches located throughout the county. Though a substantially smaller county, in terms of both population and physical size, Contra Costa has provided a branch court in west county (Richmond) to better serve residents of that area.

The county's Municipal Court system has recently changed from a 5 district to a 4 district system, with the consolidation of the Richmond and West Judicial Districts in west county. The districts are further divided into departments; there are 14 departments served by 14 judges located in eight different county cities. The Municipal Court departments occupy 8,734 square feet of floor space, 1,210 of which are in the County Court House in Martinez. In addition to the department located in the Court House, there is a second Martinez department located in the Veteran's Memorial Building at 930 Ward Street. The following summarizes the locations of Municipal Court facilities within the county (data concerning cases filed is for 1974; note that Richmond and West District information is presented separately to reflect the situation existing at the time the data was gathered - 1974-1975):

- Delta Judicial District - Two Judges (16,183 cases filed)
 - Pittsburg Two Departments
 - Brentwood One Branch Office

- Mt. Diablo Judicial District - Four Judges (32,636 cases filed)

Concord	Two Departments
Martinez	Two Departments
- Richmond Judicial District - Three Judges (24,571 cases filed)

Richmond	Three Departments
----------	-------------------
- Walnut Creek - Danville Judicial District - Three Judges (34,758 cases filed)

Walnut Creek	Three Departments
--------------	-------------------
- West Judicial District - Two Judges (17,955 cases filed)

San Pablo	One Department
El Cerrito	One Department

In addition to the above court facilities, there are support facilities such as the jury commissioner and the court clerks. The Superior Court Administrator/Jury Commission occupies 1,300 square feet in the Court House in Martinez, the Martinez Superior Court Clerk occupies 7,400 square feet in the Court House, and the Municipal Court Clerk occupies 2,674 square feet (508 of which is in the Court House) in locations throughout the county. The Law Library, which is located in the Martinez Court House, occupies 1,495 square feet.

District Attorney

Closely associated with the operation of the courts is the operation of the prosecutor, the County District Attorney. The prosecutor is the key administrative officer in the processing of criminal cases. He has control over the pretrial progress of most cases by (1) deciding whether to prosecute a case or to drop it, (2) determining the specific charges, or (3) negotiating reduction in charges. Consequently, the prosecutor has some leeway to determine the extent to which the offender will continue in the criminal justice system.

Like the police, the prosecutor first must determine if there is sufficient reason to believe there has been a violation of the criminal or civil code. In addition, the prosecutor reviews the available evidence to be reasonably assured that the cited offender can be successfully prosecuted. The prosecutor's actions are under continual surveillance of the press, courts, defense lawyers, and the general public; his actions can be challenged in court, and there are considerable legal and quasi-legal precedents which determine how he may operate.

Generally, a person charged with commission of a felony first comes into contact with the District Attorney's Office at (or before) his preliminary hearing. At the hearing, the prosecuting attorney presents evidence so that the court can determine whether to drop charges or continue the case. The prosecutor is also involved in all judicial proceedings which may follow the preliminary hearing, such as the pre-trial conference, arraignment, and the trial itself. He presents

evidence, prepares formal accusations, and prosecutes the case in court.

Much of the prosecuting attorney's time is spent researching cases, gathering evidence, contacting potential witnesses, and preparing case materials. In some instances, witnesses who are in custody are contacted.

The District Attorney provides services through offices located in Martinez, El Sobrante, Pittsburg, Pleasant Hill and Richmond. These offices occupy 22,170 square feet of space, 8,550 of which are on the fourth floor of the County Court House in Martinez. The District Attorney's Office will soon be occupying 4,300 additional square feet of office space on the fourth floor of the Court House. This space has been vacated by the County Counsel. Additional office space in Martinez is rented at 821 Escobar Street. Currently, 171 persons are employed as staff for the District Attorney's Office.

Public Defender

The Public Defender's Office is responsible for defending those persons incapable of paying for private legal services. The Public Defender and staff serve the defendant on his request, on request of a friend, family, or agency, or by court appointment. Arrangement for a person's defense by the Public Defender are generally made by the judge at the initial appearance. The Public Defender then assigns a staff attorney to the case, and the attorney begins consultation with the defendant and planning for his defense. Between initial contact and the actual trial, there is generally considerable contact between attorney and client. If the defendant is incarcerated during this period, the attorney must visit him in the detention facility.

While the Public Defender's activities are more often directly related to the courts and detention facilities, there is continuing contact with the other components of the criminal justice system (e.g., police, district attorney, probation, and community support programs). Therefore, spatial proximity and other concomitants of access are important.

The Public Defender's Office operates from quarters in the cities of Martinez, Concord, Pittsburg, and Richmond. A staff of 67, 36 of whom are attorneys, occupies a total of 12,150 square feet, 4,940 of which are outside of Martinez. The Martinez office is located in a leased building at 610 Court Street. Currently, approximately 60% of the defendants in criminal case tried in the county are defended by the Public Defender's Office.

Probation

If a defendant is tried, and convicted, the court may place him under the supervision of the County Probation Department. Many convicted persons are sentenced to serve time in jail as a condition of probation. Probation involves surveillance and treatment designed to encourage the rehabilitation of individual offenders. It is an alternative to traditional incarceration since treatment may be structured to individual needs in order to provide the best possible transition back into society.

The sentencing of an offender to probation is a decision of the court. The judge, with the assistance of probation staff, must weigh the benefits of probation against the benefits of incarceration. The probation staff has considerable contact with the convicted offender housed in the main jail while he awaits sentencing. In Contra Costa County, upon sentencing, the offender most often leaves the main jail; either through transfer to a long term facility (Rehabilitation Center or Work Furlough Center) or release on probation and/or fine.

In addition to its supervision of sentenced inmates, the Probation Department is also involved in the pre-trial release process. Probation officers often help in determining whether to release a person through a pre-trial release program or to detain him until trial.

The Probation Department services the courts and convicted individuals through facilities in Martinez, Antioch, Concord, Richmond and Walnut Creek. In 1975-76 the Adult Probation Division made 7,672 court investigations and supervised an average of 4,790 probationers each month. The magnitude of these statistics is indicative of the extent of contact between probation officers and inmates at the jail.

Community Service and Support Facilities

The criminal justice system includes a component composed of support agencies, both public and private, which are organized to complement and augment the services provided by the traditional criminal justice agencies. These supportive service agencies provide specialized and unique assistance to the inmates in the areas of mental and physical health, family counseling, vocational and academic education, drug and alcoholic abuse counseling, sheltered and supportive living facilities, recreation, and religious services. Services can be provided to offenders and their families either in or outside of the detention facilities. Agencies can provide programs on an individual or group basis. Depending upon needs of the individual (prisoner, probationer, family member) programs are available on a live-in, drop-in or scheduled basis.

The supportive services system is composed of a large number of independent agencies of varying size, location, and programmatic resources. No formalized set of relationships exists among all of the various agencies. Programmatic standards are more often established and maintained by the systems associated with the prime focus of the services provided (i.e., health, crisis information, alcohol recovery centers, vocational education schools, etc.).

Supportive services are considered a component of the criminal justice system in recognition that a considerable number of inmates and probationers are referred to these programs in anticipation that such referral will reduce criminal behavior and also reduce the demands made upon the traditional components of the justice system.

In 1975, the City of Concord Planning Department conducted a Social Services Study. Fourteen hundred (1400) human service organizations were contacted

in the initial service areas of Contra Costa County and the Cities of Berkeley, Oakland and Alameda. Of these, 982 were included in an inventory and some 664 agencies participated in a survey. A "Phase I Directory" was compiled listing names, addresses and telephone numbers of organizations within a particular geographic location.

Facility Sciences Corporation (FSC), the project's programming consultant, identified a number of supportive services in its Service Program report which were considered important by inmates, critics of the existing facility, and others knowledgeable in the field. FSC listed needs for program support in the areas of education, counseling, religion, recreation and volunteer assistance.

As the term of incarceration in a pre-trial facility is usually short, most supportive services must be organized to provide unique, unitized, and problem oriented aid. Volunteer staff from community organizations can provide support in such situations. This staff is usually familiar with the background and life-style of the inmates. They are not required to make long term commitments to conduct on-going classes, and can be assigned to work with the inmates in subject areas in which the volunteer feels most comfortable.

The forecasted increase in the detention population, the development of an understanding for the need of supportive services, and the provision of assigned space all indicate that there will be an increase in the provision of supportive services within the facility. Such increases will lead to a greater number of non-detention facility staff personnel in the facility. Similarly there will be an increase in the formal grouping of inmates involved in particular programs.

IMPACTS OF THE PROJECT

The construction of a new detention facility in the County Civic Center in Martinez will have major impacts upon the county's criminal justice system. In general, it will facilitate operation of the total system, and improve coordination among the system's components. These impacts will result from such factors as increased capacity, increased program space, improved and expanded visiting and booking facilities, and the inclusion within the facility of two courtrooms and attendant court facilities. Impacts upon the entire system will result from specific improvements in the operation and coordination of its various components. The following discussion focuses upon the impacts of the project upon those components.

Impacts Upon Police

The introduction of a modern detention facility is expected to influence the operation of police agencies within the county. It will expedite and facilitate the receipt, booking, and housing of prisoners. It may also induce certain police agencies to close their temporary booking facilities and book persons directly into the proposed county facility.

The project is designed so that the intake area will be a smooth flowing processing area, which will insure rapid identification and booking of prisoners. Given the limited space and facilities available for intake in the present main jail, it is expected that the project will result in reducing the amount of time local police must spend at the county detention facility when bringing prisoners for booking. This will enable them to spend more time performing their other duties.

It is possible that a number of the police agencies which currently maintain their own temporary holding facilities, may decide to book their prisoners directly into the proposed detention facility because it will provide superior accommodations, and because some cities may find it less costly to do so. This would result in reduced operational costs to the local agency, reduce the use of local police personnel to supervise detained persons, and increase the number of officers available for other duties. These savings would be offset in part by the additional costs in time and mileage required to transport each arrestee to Martinez. Increased booking by local police into the main county detention facility would also increase the burden upon the Sheriff's Office.

Impacts Upon Detention Facilities

The proposed project will have major impacts upon the county's detention system. Specifically, the replacement of the existing main and branch jails will affect county operated facilities, city operated facilities, the relationship of the detention system to other criminal justice system components, and future detention system needs and plans.

Because the new facility will concentrate pre-trial detention activities in one place, will provide adequate capacity, and is designed to be efficiently operated, construction of the project will substantially simplify operation of the County's detention system. Transportation difficulties and coordination problems which currently result from the use of two facilities separated by approximately 20 miles and the housing of persons in other counties will be eliminated.

Impacts Upon City Operated Detention Facilities

The proposed facility may have an influence on the detention activities conducted by those cities which now maintain Type I jails or temporary holding cells. Facility Sciences Corporation concluded that the mere availability of new or expanded county facilities will positively influence current booking policies.⁸ This indicates that the increased capacity and high standards of the proposed facility may influence sentences. For example, judges who, in the past, may have sentenced misdemeanants to serve short terms (usually one day), in city jails, due primarily to the overcrowding of the main jail, may sentence them to the new detention facility. Additionally, it was noted that there may be an increasing use of the new facilities by the cities to meet statutory requirements for prisoner housing and services which are not available in many city jails (e.g., quarters for security risks, females, disturbed inmates and sex offenders). From these comments it can be seen that it is likely that the daily population count at the local jails may decrease once the proposed county facility begins operation.

Impacts Upon Detention Facility System Operation

The proposed detention facility will impact the detention system by increasing the centralization of detention activities, potentially decreasing the involvement of the local municipal police in the detention system as jailers, and requiring a modification of the system of receipt, booking, examination, assignment, security, support, release, and discharge of persons brought to the county jail for booking. The resultant system will be significantly changed and will be more in keeping with current standards for correctional health, civil rights, and judicial operations. It is expected to be considerably more efficient and easier to operate and coordinate. Changes may result in the procedures used for transporting prisoners, and in the standardization of booking and inmate record keeping procedures used in city and county jail operations.

The project will similarly affect relationships between the detention system and the other components of the criminal justice system. These relationships are discussed in the following sections dealing with other justice system components (police, courts, etc.).

⁸Facility Sciences Corporation, "Bed Capacity Forecasts," September 8, 1976.

Impacts Upon County Operated Detention Facilities

The project will result in the termination of the use of the main and branch jails as pretrial detention facilities. At this time, the Sheriff intends to recon-vert the branch jail to its use as a dormitory for the rehabilitation center. This will increase the capacity of the center. Possible uses for the main jail were reviewed by the project architect, Kaplan and McLaughlin. Based upon an evaluation of the facility's architectural and engineering conditions, they identified seven alternative future uses for the main jail:

1. Remodel the entire facility for office functions
2. Remodel the entire facility for a County Library and/or storage
3. Demolish the 1944 addition; build a new office building to replace it, and remodel the 1901 portion into offices.
4. Demolish the entire jail and build a new county office building.
5. Demolish the entire jail and establish a plaza as recommended in the 1963 Contra Costa County Civic Center Development Plan.
6. Demolish the entire jail and use the area for parking.
7. Demolish the 1944 addition, establish a plaza, and do minor remodeling of the 1901 portion into County public information offices or museum.

Kaplan and McLaughlin recommended that Alternative 7 be implemented. This is generally consistent with the 1963 Civic Center Plan, which shows the entire area between the existing Finance and Administration Buildings as an open plaza.

As noted in the first part of this chapter, the Sheriff currently houses some prisoners in facilities in other counties. Construction of the project will provide sufficient capacity within county facilities to house all county inmates, thus eliminating the need to house people out of county.

A positive impact of the project on County detention facility operations will be an increased ability to separate different types of prisoners. State law requires that inmates be segregated on the basis of sex, judicial status (sentenced/unsentenced), and severity of offense; and jail operations often make further segregation desirable. Currently, segregation is a major problem, as evidenced by the fact that until the Superior Court issued an order to provide proper segregation (January 5, 1976), the main and branch jails were not complying with the State law regarding segregation. The new facility is designed with sufficient flexibility and accommodations for segregation, so that inmate separation is not expected to be a problem after the facility becomes operable. In fact, the use of single cells provides for total flexibility, by allowing for complete segregation of inmates from one another by isolating each in a single cell.

⁷ Kaplan and McLaughlin, "Contra Costa Detention Facility Site Selection and Development Study," November, 1976.

Impacts Upon Future Detention Facility System Needs and Plans

According to inmate population projections prepared by Facility Sciences Corporation, the new facility will reach capacity by 1985, or soon thereafter. Thus a significant impact of facility construction will be the need to develop plans to meet capacity requirements which will arise 5 to 10 years after the facility is opened, by providing additional capacity or expanding the use of pre-trial release programs (see Inmate Capacity Chapter, No. 5 for a more detailed discussion of this issue and a presentation of mitigation measures).

Impacts Upon Courts

The proposed detention facility will have a significant impact upon the court system in various ways. The impact will be greatest for those courts located in Martinez and those which handle primarily criminal cases. The courts located in communities at a greater distance from Martinez will be little affected. Unsented inmates will continue to be transported between a Martinez detention facility and the local court. Since the project and the existing main jail are within two city blocks of one another transportation costs and travel time will be virtually unaffected.

Specific impacts upon the court system include increased convenience and more efficient operation, an increase in the number of court facilities, and the potential for an increase in incarceration rates. The facility will enhance the efficiency of court operations because it is designed to improve the functional relationships which exist between detention and courts. An element of the proposed project design is the incorporation within the detention structure of a courts component, with one Municipal Court, and one Superior Court, 2 judges chambers, a lobby, and facilities for clerks, and bailiffs. One purpose of the courts complex is to provide a secure area for initial appearances, preliminary hearings, arraignments, and other court procedures which require short periods of time. By enabling many of those procedures to take place within the structure, security is enhanced, prisoner movement is simplified, considerable time is saved, and the necessity to transport prisoners through the streets is minimized.

Another anticipated impact of the new facility is a reduction in concerns expressed to the courts regarding jail conditions. A reduction in such complaints could allow the courts more time to supervise other components of the criminal justice system.

By providing two additional courtrooms and attendant court facilities (approximately 15,000 square feet of floor space), the project will increase available court space and partially satisfy the short-term need for additional space. The Martinez Municipal Court will be moved from the Court House into the new facility, thus providing an additional courtroom for the Superior Court within the Court House. A second additional courtroom for the Superior Court will be provided in the facility. In addition to providing these two additional

courtrooms, the detention facility structure is designed so that further additional courtrooms can be added on the site at a later date. Present plans are to add 4 or more additional courts in an attached courts structure at a later date.

A possible result of the project is an increase in the county's incarceration rate (inmates per 1000 population). According to data provided by the State Board of Corrections, Contra Costa County has one of the lowest incarceration rates in the state; in 1974-75 only two counties had lower rates. Given the increased capacity and improved environment of the proposed facility, some observers have suggested that once the facility is operable judges may be inclined to detain some of the persons who are currently released before trial. Concerns about overcrowding and poor detention conditions will no longer influence decisions concerning release policies.

A final impact of the proposed detention facility is its affect upon the future development of the county's court system. Construction of the facility with its court annex, and the proposal for an additional two courts commits the county to continued concentration of Superior Court facilities in Martinez, and limits the opportunity to develop branch facilities in other areas of the county. This may have a negative impact on the other areas.

Mitigation Measures

In order to ensure that maximum feasible use of alternatives to incarceration will be pursued once the inducement to release people for reasons of inadequate capacity and poor jail conditions no longer exists (i.e., when the project becomes operable), Facility Sciences Corporation has recommended that thoroughly defined release policies and procedures which would apply regardless of the number of empty beds in the new facility be developed.¹⁰

Impacts Upon the District Attorney

The construction of the proposed facility in the civic center will not have major impacts upon the District Attorney's Office. The facilities occupied by District Attorney staff are not expected to be affected by the project, but operations will be affected. The project will provide better access and improved facilities for interviews with inmates who are held in detention. Additionally, by facilitating judicial processes, the project will facilitate the District Attorney's operation.

⁹ California State Board of Corrections, Report of Inspection of Local Detention Facilities to the California Legislature, March, 1976.

¹⁰ Facility Sciences Corporation, Detention Facility Service Program, December 10, 1976.

Impacts Upon the Public Defender

The proposed facility is expected to affect the operations of the Public Defender's Office. Since the project will have significantly expanded and improved visiting facilities, visitation and consultation with inmates will be considerably more pleasant, convenient, and more conducive to productivity for both attorney and client. Additionally, it will minimize the amount of time attorneys must spend waiting for an available visiting booth, a problem which currently results in considerable loss of time for them. By provision of court operations within the detention facility, the project will facilitate the operations of some of the Public Defender staff involved in court procedures conducted therein. A possible impact of the project is a decrease in the number of cases taken by the Public Defender contesting conditions and treatment in the county's detention facilities.

Impacts Upon Probation

The proposed detention facility will affect the Probation Department primarily by providing improved and expanded visiting facilities for probation staff. Visitation areas will be provided in each housing module. This will not only make visiting more convenient, but will also provide a better atmosphere in which to counsel individuals. The concentration of detention services in Martinez will tend to centralize staffing of the Adult Probation Division, in Martinez. Also, the project will facilitate operation and coordination of the entire criminal justice system, thus benefitting all components of that system, including Probation.

Impacts Upon Community Services and Support Facilities

The project will have a major impact upon those supportive services which operate programs within or through the detention facility. The facility will have expanded and improved visiting areas and special facilities for counseling purposes. The counseling area includes two counseling rooms, an office, and three volunteer's work stations. In addition, there is an education area, which contains one classroom and a chapel, which can also serve as a classroom or meeting room. The provision of these facilities provides considerably expanded opportunities for organizations to operate programs within the detention facility. In the present main jail counseling, educational, and other programs are very limited due to the lack of facilities available for such purposes.

Table 4

CRIMINAL JUSTICE SYSTEM FACILITIES

<u>City</u>	<u>Address</u>	<u>Jurisdiction</u>
<u>Antioch</u>		
Police	301 W. 10th	City
Detention	301 W. 10th	City
Probation	213 G	County
<u>Brentwood</u>		
Police	703 3rd	City
Detention	708 3rd	City
Muni Court	1420 Highway 4	County
<u>Clayton</u>		
Police	6054 Main	City
<u>Concord</u>		
Police	Willow Pass & Parkside Ave.	City
Detention	Willow Pass & Parkside Ave.	City
Muni Court	1950 Parkside Drive	County
District Att.	1957 Parkside Drive	County
Probation	2525 Standwell Drive	County
Public Def.	1957 Parkside Drive	County
<u>El Cerrito</u>		
Police	10900 San Pablo Ave.	City
Detention	10900 San Pablo Ave.	City
Muni Court	6323 Manila Avenue	County
<u>Martinez</u>		
Police	525 Henrietta	City
Detention	650 Pine Street	County
Sheriff	651 Pine Street	County
Superior Court	725 Court Street	County
Muni Court	725 Court Street	County
District Att.	725 Court Street	County
Public Defender	610 Court Street	County
Probation	938 Main Street	County

Table 4, cont'd.

Pinole

Police	2121 Pear Pine	City
Detention	2121 Pear Pine	City

Pittsburg

Police	55 Civic Ave.	City
Detention	55 Civic Ave.	City
Muni Court	45 Civic Ave.	County
Public Defender	423 Cumberland	County
Probation	423 Cumberland	County

Pleasant Hill

Police	1900 Pleasant Hill Road	City
--------	-------------------------	------

Richmond

Police	27th & Barrett	City
Detention (City)	27th & Barrett	City
Detention (Co.)	847 Brookside Dr.	County
Superior Court	100 - 37th Street	County
Muni Court	100 - 37th	County
District Att.	100 - 37th	County
Public Defender	3811 Bissell Ave.	County
Probation	3811 Bissell Ave.	County

San Pablo

Police	2021 Market Street	City
Detention	2021 Market Street	City
Muni Court	2021 Market Street	County

Walnut Creek

Police	1649 N. Broadway	City
Detention	1649 N. Broadway	City
Muni Court	640 Ygnacio Valley Blvd.	County
Probation	630 Ygnacio Valley Blvd.	County

SPECIAL DISTRICT - Police

Kensington	217 Arlington Ave.
East Bay Regional Park District	7901 Redwood Road, Oakland
BART	800 Madison, Oakland
Highway Patrol	5001 Blum Road, Martinez

UNINCORPORATED AREA

Detention	Marsh Creek Road
-----------	------------------

Table 5

SUMMARY OF CRIMINAL JUSTICE SYSTEM FACILITIES
CONTRA COSTA COUNTY

<u>City/Commun.</u>	<u>Police</u>	<u>Detention</u>	<u>Courts</u>	<u>District Attorney</u>	<u>Public Defender</u>	<u>Probation</u>
Antioch	*	*				C
Brentwood	*	*	M			
Clayton	*					
Concord	*	*	M	C	C	C
El Cerrito	*	*	M			
Hercules						
Lafayette						
Martinez	*-C	C	S-M	C	C	C
Pinole	*	*				
Pittsburg	*	*	M		C	C
Pleasant Hill	*					
Richmond	*	*-C	S-M	C	C	C
San Pablo	*	*	M			
Walnut Creek	*	*	M			C

Special District

Kensington	*
East Bay	
Regional Park	*
BART	*
Calif. State	
Highway Pat.	*

Unincorp. Area

Marsh Creek	C
-------------	---

* = operated by the city or jurisdiction.

C = operated by the county

S = Superior Courts

M = Municipal Courts

Chapter 24

CAPITAL IMPROVEMENTS POLICIES

Contra Costa County Detention Facility
Environmental Impact Report, Background Report
Contra Costa County, California

Contra Costa County Public Works Department
February, 1977

TABLE OF CONTENTS

	<u>Page</u>
INTRODUCTION	24-1
FINANCIAL HISTORY	24-1
IMPACT OF FACILITY ON CAPITAL PROGRAMMING	24-2
DETENTION FACILITY AND COUNTY PLANS	24-5
TABLE 1	24-3

INTRODUCTION

The purpose of this chapter is to indicate how the proposed Detention Facility Project relates to the overall long-range capital improvement programming needs of the County. The chapter will be broken down into the following areas:

1. The outline of the financial history of the Detention Facility from the time of the initial determination of need to the current fully funded project.
2. The impact of this project on the capital improvement program for the County, and the overall county-wide space allocation and building project priorities system used during this period.
3. The relationship of the Detention Facility and County Plans.
4. Capital improvement programming methods and requirements for the future.

FINANCIAL HISTORY

In March of 1963, at the request of the Board of Supervisors, Contra Costa County's Civic Center Master Plan proposed by the consulting firm of Confer and Anderson was completed and published. (See Chapter 19). This plan included an area of downtown Martinez, adjacent to a residential neighborhood, which already contained a number of older, County-owned buildings. The plan concept focused on concentrated high-rise development in a County "superblock" area, and called for the retention of some older buildings and the eventual replacement and demolition of many others. One of the buildings to be replaced and demolished was the Contra Costa County Main Jail, which in reports unrelated to the Civic Center Plan had been deplored as an inadequate facility by various Contra Costa County Grand Juries. In November of 1963, the County Board of Supervisors voted to adopt, in principle, the Civic Center plan described above.

In June of 1966, the Board of Supervisors authorized the execution of an agreement with Frederick L. R. Confer and Associates for the design of a Hall of Justice complex, which included a law enforcement administration building, a criminal courts building, and a detention facility. This complex was in keeping with the Civic Center plan adopted in 1963.

In December of 1966, the Board approved plans and cost estimates for the Hall of Justice complex. The preliminary estimate was \$8 million, of which \$4,500,000 was for the detention facility. The cost of this complex exceeded the total sum expended for all fixed assets during the previous several years. It was, therefore, apparent that the resources

for County plant acquisitions would be dominated by planning for Criminal Justice facilities, the major portion of which would be the central detention facilities. Other capital projects did continue as they were financed to a large degree by "restricted" revenue sources, such as categorical aids and grants, and taxes raised from special taxation areas. Thus, the construction of new roads and drainage facilities along with airport improvements did continue. The Administrator's Office was requested to examine other means of financing the detention facility. Various State and Federal grant programs did exist, but they were too restrictive to allow use on this project. It became apparent that the best method of financing would be general obligation bonds. By using bonds, immediate construction could take place with the repayment over the normal bond redemption period. In addition, by repaying the bonds over a period of years, new property values could be assessed, thereby broadening the repayment base and take advantage of County growth. With this information, the Board of Supervisors decided to finance the detention facilities with a \$10,250,000 bond issue. Subsequently, in June of 1967, the voters of Contra Costa County defeated this bond issue.

The loss at the polls of the bond issue did not diminish the need for this major project; it instead required that another funding source be found. The Board of Supervisors, therefore, voted an additional five cents per one hundred dollars tax override for the 1970-71 budget. The additional revenue from this tax would be placed in reserve to provide for the construction of the Detention Facility. The following year, realizing that the revenue obtained was increasing too slowly, the Board of Supervisors raised this tax override to ten cents per one hundred dollars and retained this rate for the following two fiscal years.

With the advent of revenue sharing in 1973, the Board of Supervisors allocated \$15,000,000 of this new source for the Detention Project with the remainder of the approximately \$20,000,000 available for the project from the Accumulative Capital Outlay fund and approximately \$573,000 from General Fund revenues which were utilized early in the project for planning.

IMPACT OF FACILITY ON CAPITAL PROGRAMMING

While expenditures for County capital improvements did continue from 1966, to the present, they were severely limited by the long-range financing needed to complete the Detention Facility. Until the financing of the Detention Facility was finalized, only the most essential capital improvements projects could be considered except for those with special grant or categorical funding. In spite of this, over \$17 million were spent during 1966 to 1976 for plant acquisition (See Attachment Table 1).

TABLE 1
EXPENDITURES SUMMARIZED BY FUNCTION AND ACTIVITY
SOURCE: COUNTY FINANCIAL REPORT

Plant Acquisition

1965-66	460,953
1966-67	2,176,504
1967-68	2,400,538
1968-69	1,340,494
1969-70	544,390
1970-71	1,023,573
1971-72	1,204,642
1972-73	2,868,761
1973-74	2,332,708
1974-75	2,965,373

The procedure used during this period mandated that each County department submit proposed building projects needed during the five-year period following the next fiscal year. Detailed information indicating how the proposed improvements related to the departmental services or work program were also provided with the requests. The impacts of new facilities on operating costs and revenues were estimated so that the Capital Program would relate to the overall operation and maintenance costs for the County.

For all projects, departments were asked to provide suggestions on possible sources of construction funds available from either State or Federal sources. These were then included in the County's long-range capital program. Under this concept, all building projects proposed were reviewed and evaluated. Priorities were established and plans were developed for financing those high priority projects; although, general fund monies were not available except for the most urgent projects. With the above information, the Administrator's Office could develop priority listing of the projects, using the following four points as criteria:

1. Essential Projects: Normally, this was reconstruction of current housing to meet code requirements, or construction necessary to preserve the building itself.
2. Desirable Projects: Those for construction of new facilities necessary because of the increase in governmental operations which in the long term would reduce rental needs or meet the program needs of the department.
3. Deferrable Projects: Those projects necessary within the foreseeable future but of less priority than the above.
4. Unnecessary: Those projects which in the long-range concept were not necessary for construction.

As noted, this type of long-range capital projects planning did provide for funding of certain projects. In 1968, for instance, the central County Administration Building's overcrowding problem was aided by the construction of a new building outside the Civic Center to house the Contra Costa County Flood Control and Water Conservation District offices. This released an entire floor of the Administration Building for other uses.

Even though the bond issue for a new criminal detention complex was defeated by the voters of Contra Costa County, the need for improving the conditions in the County's existing detention facilities continues. To alleviate these problems, the County was required to initiate interim improvements. In 1972, the County spent approximately \$155,000 to convert one of the Rehabilitation Center dormitories into a maximum security detention facility which provided beds for about 60 inmates. In 1973,

at a cost of approximately \$2 million, a new detention wing and classroom facilities were constructed at the County's Juvenile Hall in Martinez. The following year, 1974, \$700,000 was spent to construct a Residential Treatment Center, also at the Juvenile Hall. There were three criminal justice projects in 1976, one of which was a \$700,000 remodeling job on the County Courthouse in downtown Martinez. Another project that year provided for the construction of a \$500,000 Gymnasium at the Juvenile Hall facility. Finally, in May of 1975, a new Work Furlough Center was opened in Richmond for sentenced men. The Work Furlough Center was constructed with \$1 million federal Law Enforcement Assistance Administration (LEAA) grant funds.

The capital improvement projects for Contra Costa County Flood Control and Water Conservation Districts and the County's road system were funded separately through special revenue as mandated by federal and state legislation.

DETENTION FACILITY AND COUNTY PLANS

Capital improvements programming is most effectively accomplished in the context of "master plans" for public services and overall development. This relationship is the basis for Sections 65401 and 65402 of the California Government Code which provide for a local government's projects and capital programs to be reviewed by their planning agencies for coordination with the jurisdiction's General Plan.

As noted in Chapter 19, the proposed Detention Facility project was anticipated in the County's Civic Center Master Plan of 1963, and the Civic Center, in turn, is accommodated in the County's General Plan.

The difficulties in capital improvements programming by the County which resulted from delays in resolving the "jail" issue also inhibited the preparation of County facilities plans. This does not seriously affect programming for the current Detention Facility Project, but future projects (including additional criminal justice facilities discussed in this chapter) are generally not well provided for in the County's adopted plans. Chapter 19 indicates that a new Civic Center plan is desirable and that the County General Plan should be revised to include more information on facilities.

LONG RANGE CAPITAL PROGRAMMING

In the recent past, the complexity of planning and funding for the Detention Facility has hindered the County's overall capital improvements program. This problem is being reduced as plans for the Detention Facility move ahead. With this impediment removed, the County can address other capital improvement needs.

Allocating resources for a complete and efficient capital improvements

program is a complicated task. The demands placed on County financial resources for capital improvements will increase as the County grows and as alternative sources of revenue decline, as services compete with capital projects, and if building costs and inflation continue to outstrip the growth of the tax base.

There are many different types of activities which require capital funds. They can be generally categorized under the following five headings:

1. Criminal Justice System
2. Public Works Projects
3. General Government Office space
4. Medical Facilities
5. Miscellaneous Projects

An examination of any one of these areas will reveal that they are interrelated to some degree and that a total conceptual approach to capital funding will best provide for the County's needs.

A by-product of the planning for the Detention Facility has been the identification of several other criminal justice capital needs. There is a need to construct additional courts, both Municipal and Superior. (At the State level, there exists the potential for combining Municipal courts and Superior courts; this will have an impact on the long-range planning for the criminal justice complex). Even as progress on the Detention Facility Project continues, it is understood that the facility may need to be enlarged within ten years to correspond to the increase in the County's population, (see Chapter 22).

Recently the Public Works Department published a report indicating that traditional revenues for road maintenance and construction (gasoline tax revenues and revenues from fines and forfeitures) would fail to meet the projected maintenance costs by Fiscal Year 1979-80. This anticipated decline in revenues necessitates seeking alternative revenue sources. One such source was an additional 5-cent tax override for road purposes. This proposal was presented to the voters in 1976 and was defeated. Unless additional revenue sources can be found, however, general fund money will be needed to maintain the existing road network in the County.

As future development in Contra Costa County continues, so will the need for additional road construction as well as planning and construction for drainage and flood control. This is just one example of how capital projects are interrelated and an indication of the types of demands which will be placed on the General Fund for capital improvements.

In order to maximize funds for capital programs as they become available, it is necessary to know the space requirements for all government operations. To this end, the Facility Sciences Corporation was retained by

the County to conduct a space utilization study of the County Administration Building. Their report, which was published in August 1975, identified the short-range needs and long-range goals for space utilization. Some recommendations made in this report are currently being implemented. In addition to this study, the County Administrator's Office completed a space requirement report for the West County area in December, 1975, detailing all of the long-range space needs for County government in that area. A report is in progress to study the East County space requirements, and upon the completion of that report, the Central County space requirements will be studied.

To effectively utilize the County's limited resources for capital improvements, an overall plan for its own physical plant should be prepared. Presently the County is leasing approximately 480,000 square feet of space at an annual cost of approximately \$1,750,000 for rental fees. Leasing space for long-term needs is not the most effective method of solving total housing problems unless it is part of a lease-purchase program.

Another major area requiring capital funding is medical facilities. During the past several years, continued expenditures have been made merely to maintain and update the present County Hospital. This was required to meet new State and Federal regulations governing all hospital facilities. A study of future medical facilities would provide a major component of the overall capital program.

Other burdens on General Fund monies for capital improvements, not represented above, are miscellaneous projects which are not easily categorized. Examples of these types of projects are the airport improvements recommended in the recently completed airport master plan and County Service Area plans for such projects as recreation facilities.

There is a need to coordinate and combine all capital improvement projects in a comprehensive program contained in a published financial plan. Such a program must remain flexible to accommodate the changing nature of the County and its government. The advantages to this approach are:

1. It presents in a single format the entire capital needs for the County incurring long-range planning and drawing attention to the various deficiencies currently in existence with a proposed timetable for their solution.
2. It protects the public from certain pressure groups who continually demand that their project be at the top of the list and first to be funded.
3. By itemizing the long-range needs of the County, it provides a more appropriate funneling of grants, bonds and other outside revenue sources.
4. It provides the Board of Supervisors with a comprehensive plan of needs and financing with which to make more informed budget decisions both on a short and long-range basis.

With the resolution of planning and funding for the Detention Project and the receipt of new Federal Revenue Sharing allocations, the Office of the County Administrator is moving to implement a capital projects planning organization to develop a long-range plan for all county capital projects needs.

RESPONSIBLE PERSONNEL

COUNTY DETENTION FACILITY ENVIRONMENTAL IMPACT REPORT TASK FORCE

County Administrator's Office

Martin J. Nichols, Supervising Management Analyst

County Planning Department

Dale Sanders, Planning Ecologist
Charles A. Zahn, Planning Coordinator*

County Public Works Department

Thomas M. Finley, Detention Facility Project Manager

County Sheriff-Coroner's Office

Leslie A. Glenn, Administrative Services Officer

Criminal Justice Agency of Contra Costa County

George J. Roemer, Executive Director

(Liaison) City of Martinez

Barry Whittaker, Director of Planning

*Task Force Chairman

BACKGROUND REPORT CHAPTER PREPARATION

Chapter 1 - Project Location, County Planning Department

Thomas J. Kirn, Planner

Chapter 2 - Project Description, County Public Works Department

Thomas M. Finley, Detention Facility Project Manager

Chapter 3 - Project History, County Administrator's Office

Martin J. Nichols, Supervising Management Analyst

Chapter 4 - Detention Facility Standards, County Public Works Department

Louise P. Aiello, Administrative Intern

Chapter 5 - Inmate Capacity, County Planning Department

Harlan L. Menkin, Planning Specialist

Thomas J. Kirn, Planner

Chapter 6 - Project Alternatives, County Planning Department

Thomas J. Kirn, Planner

Charles A. Zahn, Planning Coordinator

Chapter 7 - Geology, Woodward-Clyde, Consultants

Charles L. Taylor, Senior Project Engineering Geologist

Kenneth D. Weaver, Senior Project Engineering Geologist

Chapter 8 - Biotic Resources, County Planning Department

Alice E. Bonner, Planner

Chapter 9 - Archaeological Evaluation, Foundation for Educational Development, Inc., California State College, Sonoma

Peter M. Banks, Staff Archaeologist

David A. Fredrickson, Professor of Anthropology

Chapter 10 - Historical Resources, County Planning Department

Alice Bonner, Planner

A. Charles Endom, Planning Graphics Supervisor

Chapter 11 - Hydrology, County Planning Department

Dale Sanders, Planning Ecologist

Chapter 12 - Water Quality, Earth Metrics, Inc.

C. Michael Hogan, President and Project Director
Patrick Ritter, Environmental Engineer

Chapter 13 - Air Quality, Earth Metrics, Inc.

Vivian Papparigian, Project Manager
C. Michael Hogan, President

Chapter 14 - Utilities, County Public Works Department

Alice Bonner, Planner
John W. Harkin, Associate Architectural Engineer

Chapter 15 - Energy, Interactive Resources, Inc.

Thomas K. Butt, President, Interactive Resources, Inc.

Chapter 16 - Traffic and Parking, J.H.K. Associates, Inc.

Benjamin H. Goff, Transportation Planner

Chapter 17 - Noise, Earth Metrics, Inc.

Vivian Papparigian, Project Manager
C. Michael Hogan, President

Chapter 18 - Existing Land Use, County Planning Department

Louise P. Aiello, Administrative Intern
Dennis C. Mesick, Planner II

Chapter 19 - Plans and Policies, County Planning Department

Charles A. Zahn, Planning Coordinator
Dennis C. Mesick, Planner II

Chapter 20 - Visual Analysis, Sedway-Cooke, Inc.

Sheila L. Brady, Associate Planner
Thomas A. Cooke, Principal In Charge

Chapter 21 - Social Impacts, County Planning Department

Thomas J. Kirn, Planner
Harlan L. Menkin, Planning Specialist

Chapter 22 - Economics, County Planning Department

Thomas J. Kirn, Planner
Harlan L. Menkin, Planning Specialist

Chapter 23 - Criminal Justice Facilities, County Planning Department

Thomas J. Kirn, Planner

George W. Johnson, Administrative Services Assistant III

Chapter 24 - Capital Improvements Policies, County Public Works Department

Ronald E. Morse, Administrative Services Officer II

Report Preparation - Contra Costa County Planning Department

Robert Koperski, Graphics Artist

U.C. BERKELEY LIBRARIES



C124903160

